

Search & Summary

Human Factors in Vertical Flight Simultaneous Non-interfering Operations (SNI), Volume I: Noncopyrighted Literature Search Results

Prepared for: Federal Aviation Administration (FAA)
Office of the Chief Scientist for Human Factors
(AAR-100)
Washington, DC

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August 2001

Distribution authorized to US Government agencies and their contractors (Special Authority) (August 2001). Other requests for this document shall be referred to the Human Systems Information Analysis Center (HSIAC), AFRL/HEC/HSIAC Bldg. 196, ATTENTION: Information Specialist, 2261 Monahan Way, Wright-Patterson AFB, OH 45433-7022

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13. ABSTRACT (Maximum 200 Words) The FAA requires information in the area of human factors associated with vertical flight (or helicopter, rotorcraft, tilt-rotor) operations within the NAS. Thus, the Office of the Chief Scientist for Human Factors must have a comprehensive understanding of (1) the extent of national and international human factors research directed toward vertical flight air crew performance especially dealing with flight and navigation instrumentation; (2) the most significant research along with its conclusions and recommendations; and, (3) the national and international vertical flight research resources available to include government labs, universities, and contractors. This HSIAC S&S effort was designed to provide a broad base of literature and research citation resources that will allow the FAA AAR-100 to pursue answers to the following questions: <ul style="list-style-type: none"> • What would be considered the minimal flight instrumentation for safe VFR SNI helicopter operations? • What would be acceptable pilot performance skills and abilities to conduct such flights? • What should be the minimum amount of protected airspace required for the VFR helicopter flying a SNI leg/route from a human performance standpoint? 				
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NOTICE

This report comprises two volumes. Volume I (HSIAC-SS-2001-003) is the final report on Human Factors in Vertical Flight and noncopyrighted literature search results. Volume II (HSIAC-SS-2001-004) contains pertinent copyrighted citations extracted from commercial databases.

DISCLAIMER

The views, opinions, and/or findings contained in this report are those of the authors and should not be construed as an official Federal Aviation Administration position, policy, or decision, unless so designated by other documentation.

1. INTRODUCTION

1.1 BACKGROUND

This Human Systems Information Analysis Center (HSIAC) Search & Summary (S&S) provides support to the Federal Aviation Administration (FAA) Office of the Chief Scientist for Human Factors (AAR-100).

The FAA (AAR-100) provides human factors support to many organizations within the FAA structure. In order to do so it often conducts applied research into human factors issues impinging on the safe and efficient operation of commercial aircraft through our national airspace. These research efforts in turn require comprehensive literature searches to provide the basis from which to begin their original work.

1.2 PURPOSE

There are many topics of interest to AAR-100 researchers. One issue concerns the simultaneous non-interfering operations (SNI) of visual flight rules (VFR) helicopters and fixed wing traffic instrument flight rules (IFR) and VFR in the same airspace.

A technical report produced for the National Aeronautics and Space Administration states the following with respect to SNI rotorcraft operations concept:

The possibility of designing non-conflicting procedures is provided for in the FAA *Rotorcraft Master Plan* (1990) that states that developing a system to satisfy increasing demand for IFR rotorcraft operations within the national airspace system (NAS) has been a long-term charge of the aviation community.

The helicopter industry has long believed that the efficiency of IFR rotary- and fixed-wing operations are constrained by having to operate within the fixed-wing air traffic control (ATC) structure in both the terminal and en route environments. Helicopter takeoffs and landings are delayed by waiting to be sequenced into the landing pattern and fixed-wing aircraft also experience loss of efficiency when operating behind the slower rotorcraft. The unique operating capability of rotorcraft that allow these aircraft to takeoff and land without need of runways is not being fully employed. This capability has engendered the question of whether there is a need to develop a complementary and integrated IFR operating environment for these aircraft.

With the development of new technologies that support navigation via satellites such as Global Position System (GPS) and the potential application of innovative ATC procedures, the probability of creating new procedures that permit rotary- and fixed-wing aircraft to conduct simultaneous approaches and departures without affecting or interfering with each other does exist. Of particular interest are operations at busy metropolitan airports where the potential exists for conflict between rotary- and fixed-wing aircraft using the same IFR approach and departure procedures during instrument meteorological conditions (IMC).¹

To achieve this airspace redesign, it is necessary to evaluate new technological solutions that will allow VFR/IFR helicopters to fly safely in SNI operations. This requirement raises

¹ Sawyer, B. M., Peisen, D. J., & Reuss, L. M. (1999). *Simultaneous and non-interfering (SNI) rotorcraft operations* (SAIC/TR 99-01). Arlington, VA: SAIC.

several human factors questions that pertain to vertical flight operations that must be answered before SNI operations can become a reality.

1.3 SCOPE

The FAA requires information in the area of human factors associated with vertical flight (or helicopter, rotorcraft, tilt-rotor) operations within the NAS. Thus, the Office of the Chief Scientist for Human Factors must have a comprehensive understanding of (1) the extent of national and international human factors research directed toward vertical flight air crew performance especially dealing with flight and navigation instrumentation; (2) the most significant research along with its conclusions and recommendations; and, (3) the national and international vertical flight research resources available to include government labs, universities, and contractors.

This HSIAC S&S effort was designed to provide a broad base of literature and research citation resources that will allow the FAA AAR-100 to pursue answers to the following questions:

- What would be considered the minimal flight instrumentation for safe VFR SNI helicopter operations?
- What would be acceptable pilot performance skills and abilities to conduct such flights?
- What should be the minimum amount of protected airspace required for the VFR helicopter flying a SNI leg/route from a human performance standpoint?

1.4 OVERVIEW

A brief description of the research method used to identify relevant Vertical Flight Human Factors information is provided in Section 2, METHOD. Section 3, RESULTS, contains a listing of relevant citations grouped by the specific questions FAA researches would like to address. In addition, a matrix of available national and international vertical flight research resources is included in this section. ADDITIONAL READINGS OF INTEREST, Section 4, contains a list of relevant citations extracted from in-house or local technical library resources. Instructions for ordering documents are provided in Section 5, ORDERING DOCUMENTS. Finally, attachments to this report contain the literature search keyword list and strategy, and noncopyrighted citations and abstracts retrieved primarily from the DTIC Technical Reports database.

Copyrighted search results extracted from relevant commercial databases are included in the accompanying report, *Human Factors in Vertical Flight Simultaneous Non-interfering Operations (SNI), Volume II: Copyrighted Literature Search Results*.

2. METHOD

2.1 LITERATURE SEARCH

To support the FAA Office of the Chief Scientist for Human Factors, HSIAC has conducted a broad search for literature and information sources related to human factors in vertical flight. The literature search encompassed documents focused on control and display technology, pilot/operator performance, and airspace requirements. Using the strategy outlined in Attachment A, a literature search was conducted in the following government and commercial database resources:

- ✓ Aerospace Database
- ✓ Compendex
- ✓ Defense Technical Information Center (DTIC) Technical Reports (TR)
- ✓ Human Systems Information Analysis Center (HSIAC) in-house database
- ✓ INSPEC
- ✓ National Technical Information Service (NTIS)
- ✓ PsycINFO
- ✓ Science Citations Index
- ✓ Transportation Research Information Service (TRIS)
- ✓ NASA Technical Reports Server (NTRS)
- ✓ World Wide Web Resources

The literature search revealed approximately 6000 citations and abstracts. At the FAA's request, there was no attempt by HSIAC analysts to edit the search results; only minimal formatting was undertaken to facilitate readability. The relevant public distribution material is compiled into Attachment B of this report. Material retrieved from copyrighted sources is found in an accompanying volume entitled, *Human Factors in Vertical Flight Simultaneous Non-interfering Operations (SNI), Volume II: Copyrighted Literature Search Results*.

2.2 RESEARCH FACILITY SURVEY

In addition to literature search results, HSIAC has prepared a list of international research facilities (Government, Academic, and Commercial) having subject matter expertise in the area of human factors associated with helicopter aircrew performance. The list includes, where possible, points of contact with current phone, email, and addresses as well as a brief capabilities overview or research highlight. A matrix developed to compile this information is found in Section 3.2 of this report.

3. RESULTS

3.1 CITATIONS OF INTEREST

Based on a review of the citations and abstracts found in attachment B and the accompanying volume, *Human Factors in Vertical Flight Simultaneous Non-interfering Operations (SNI), Volume II: Copyrighted Literature Search Results*, special attention should be given to the documents cited below as they may contain relevant information to guide future FAA AAR-100 research activities in the identified areas of interest. To aid in locating the desired reference, the following are grouped by the specific questions FAA researches would like to address, and indexed to the HSIAC S&S volume and page number. While there is some overlap in the material cited, this categorization may assist in locating bibliographic material. Please note the literature search attachment to this report and the accompanying volume of copyrighted material contain many additional citations of value, and should be reviewed carefully for information of specific interest.

3.1.1 What would be considered the minimal flight instrumentation for safe VFR SNI helicopter operations?

Citation	Volume Page No.
<p>Rehmann, A. J. (1987). <i>Rotorcraft TCAS (Traffic Alert and Collision Avoidance System) evaluation group 3 results</i> (DOT/FAA/CT-TN87/21). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA191719)</p> <p>This report documents the operational flight test of a prototype Traffic Alert and Collision Avoidance System (TCAS) installed in a Sikorsky S-76 helicopter. The prototype TCAS, programmed to encompass the functions of a TCAS I, was flown to five east coast terminal cities, and operated along defined helicopter routes therein. The test results validated the minimum proposed TCAS I configuration. Further results recommend enhancements, to be included as options to improve the usefulness of TCAS I. Keywords: Helicopter safety; Helicopter accident prevention; Aviation safety.</p>	<p>Vol. I Pg. B-373</p>
<p>Harwood, K. & Wickens, C. D. (1991). Frames of reference for helicopter electronic maps: The relevance of spatial cognition and componential analysis (1992-41299-0001). <i>International Journal of Aviation Psychology</i>, 1(1), pp. 5-23.</p> <p>Computer-generated map displays for Nap-of-the-Earth and low-level helicopter flight were configured according to research on maps, navigational problem solving, and spatial cognition in large-scale environments. Interest centered on different frame-of-reference representations. The north-up map emphasized consistency of object location, characteristic of an earth-centered frame of reference. The track-up map emphasized map-terrain congruency, characteristic of an ego-centered frame of reference. 20 skilled male pilots used the maps to complete navigational tasks that occurred within a realistic simulation program. Findings reveal pattern of map-task dependencies. (PsycINFO Database Record (c) 2000 APA, all rights reserved)</p>	<p>Vol. II Pg. B-20</p>
<p>Hart, S. G. (1988). Helicopter human factors. In E. L. Wiener & D. C. Nagel (Eds.), <i>Human Factors in Aviation</i> (pp. 591-638). San Diego, CA: Academic Press.</p>	<p>Vol. II Pg. B-24</p>

Citation	Volume Page No.
<p>Tatro, J. S. & Roscoe, S. N. (1986). An integrated display for vertical and translational flight: Eight factors affecting pilot performance. <i>Human Factors</i>, 28(1), 101-120.</p> <p>The goal of this chapter is to review the many factors that affect the performance and workload of military and civilian helicopter pilots and to discuss significant deficiencies in research, design, and operational procedures /// typical helicopter flight tasks /// cockpit environment / vibration / noise / temperature /// helicopter controls /// information requirements / direct visual information / spatial disorientation (PsycINFO Database Record (c) 2000 APA, all rights reserved)</p>	<p>Vol. II Pg. B-27</p>
<p>Legacz, J. V., Gerdes, R. M., Forrest, R. D., & Merrill, R. K. (1981). Investigation of control, display, and crew-loading requirements for helicopter instrument approach. <i>Journal of Guidance and Control</i>, 4(6), pp. 614-622.</p> <p>No Abstract Available</p>	<p>Vol. II Pg. B-219</p>
<p>Braithwaite, M. G., Durnford, S. J., Groh, S. L., Jones, H. D., Higdon, A. A., Estrada, A., & Alvarez, E. A. (1998). Flight simulator evaluation of a novel flight instrument display to minimize the risks of spatial disorientation. <i>Aviation Space and Environmental Medicine</i>, 69(8), pp. 733-742.</p> <p>Spatial disorientation (SD) in flight remains a major source of attrition. Many SD accidents would occur regardless of the instrument display in use, since the aircrew are simply not looking at the instruments. However, there are a number of accidents which might be amenable to improved instrument displays. In an attempt to improve maintenance and reattainment of correct orientation with a reduced cognitive workload, a novel instrument display has been developed. This paper describes an assessment of the display in a UH-60 helicopter flight simulator, and tested the hypothesis that during instrument flight and recovery from unusual attitudes, the novel display permits a more accurate maintenance and reestablishment of flight parameters than the standard flight instruments. 16 male aviators (aged 25-48 yrs) flew a simulated instrument flight profile and recovery from unusual attitudes using both the standard flight instruments and the novel display. When compared with the standard instruments, both control of flight parameters and recovery from unusual attitudes were significantly improved and cognitive workload was reduced when using the novel display. (PsycINFO Database Record (c) 2000 APA, all rights reserved)</p>	<p>Vol. II Pg. B-9</p>
<p>Horn, J. F., Calise, A. J., & Prasad, J. V. R. (2001). Flight envelope cueing on a tilt-rotor aircraft using neural network limit prediction. <i>Journal of the American Helicopter Society</i>, 46 (1), pp. 23-31.</p> <p>A method for using neural networks to provide predictive flight envelope limit information was developed. The method was applied to provide a tactile cueing system for normal load factor and angle-of-attack buffet limits on the V-22 tilt-rotor aircraft. Results from a real-time piloted simulation showed that the system enabled the pilot to maneuver along the flight envelope boundaries without exceeding the limits. Results indicated that the approach has the potential to expand the effective safe maneuvering flight envelope of aircraft with structural load limits. Tilt rotor aircrafts Flight envelope cueing.</p>	<p>Vol. II Pg. B-108</p>

Citation	Volume Page No.
<p>Sadovnik, L., Manasson, V., & Mino, R. (2000). Helicopter obstacle detection radar system. In <i>Enhanced and Synthetic Vision 2000</i> (pp. 2-12). Bellingham, WA: Society of Photo-Optical Instrumentation Engineers.</p> <p>A MMW helicopter obstacle visualization radar system (HOVRS) is demonstrated by WaveBand with the support of BAE System. This system is capable of airborne detection of various obstacles. In particular, it will detect thin, 1 cm in diameter, wires from a distance of 600 m. An affordable HOVRS is possible because of the use of WaveBand's novel scanning antenna, with resolution enhanced by post-processing. The unique antenna presents a low-cost, lightweight and low profile alternative to the traditional gimbal mount. This antenna provides a crucial capability to the HOVRS, leading to high-resolution MMW imaging. Helicopter obstacle visualization radar systems (HOVRS)</p>	<p>Vol. II Pg. B-112</p>
<p>Hannen, M. D. (1999). Rotorcraft Pilot's Associate: Design and evaluation of an intelligent user interface for cockpit information management. <i>Knowledge-Based Systems</i>, 12, 8, pp. 443-456.</p> <p>The US Army's Rotorcraft Pilot's Associate (RPA) program is developing an advanced, intelligent `associate' system for flight demonstration in a future attack/scout helicopter. A significant RPA component is the intelligent user interface known as the Cockpit Information Manager (CIM). This paper describes the high-level architecture of the CIM, with emphasis on its pilot-perceptible behaviors: Crew Intent Estimation, Page Selection, Symbol Selection/Declutter, Intelligent Window Location, Automated Pan and Zoom, and Task Allocation. We then present the subjective results of recent full mission simulation studies using the CIM to illustrate pilots' attitudes toward these behaviors and their perceived effectiveness. Intelligent user interfaces Cockpit information management (CIM)</p>	<p>Vol. II Pg. B-116</p>
<p>Haas, E. C. (1998). Can 3-D auditory warning enhance helicopter cockpit safety? In <i>Proceedings of the Human Factors and Ergonomics Society</i> (pp. 1117-1121). Santa Monica, CA: Human Factors and Ergonomics Society</p> <p>The design and use of 3-D auditory warning signals can potentially enhance helicopter cockpit safety. A study was conducted to determine how quickly helicopter pilots could respond to helicopter malfunction warning signals in a simulated cockpit environment when four different signal functions (fire in left engine, fire in right engine, chips in transmission, shaft-driven compressor failure) were presented in three different presentation modes (visual only, visual plus 3-D auditory speech signals, visual plus 3-D auditory icons). The dependent variable was pilot response time to the warning signal, from the time of signal onset to the time that the pilot manipulated the collective control in the correct manner. Subjects were 12 U.S. Army pilots between the ages of 18 and 35 who possessed hearing and visual acuity within thresholds acceptable to the U.S. Army. Results indicated that signal presentation was the only significant effect. Signal function and the signal presentation x signal function interaction were not significant. Post hoc test results indicated that pilot response time to the visual signals supplemented with 3-D audio speech or auditory icon signals was significantly shorter than that to visual signals only. The data imply that 3-D audio speech and auditory icon signals provide a safe and effective mode of warning presentation in the helicopter cockpit. Auditory warnings</p>	<p>Vol. II Pg. B-116</p>

Citation	Volume Page No.
<p>Schueler, D., Durkin, J., & Funchion, R. (1999). Adaptation of a ground proximity warning system for rotorcraft. <i>Annual Forum Proceedings—American Helicopter Society, 1</i>, 293-299.</p> <p>Ground Proximity Warning Systems have experienced considerable success as a safety back-up device for fixed wing aircraft applications. Transferring this concept to a Rotorcraft, however, requires compensation for a type of aircraft that is intentionally flown at low altitudes, relatively slow airspeeds, and in most cases provides no definitive cues as it transitions to a landing or hovering state. The Naval Air System Command has chosen a system for selected helicopters in the Navy and Marine Corps inventory which has shown considerable promise during developmental and operational testing. The system incorporates a predictive warning algorithm which issues warnings based on the dynamic state of the aircraft rather than fixed altitudes alone. Other available features include a pilot selectable altitude warning, as well as warnings for excessive bank angle, gear-up landing, tailstrike, descent below ILS glideslope, and altitude loss immediately after takeoff. Predictive warning algorithm</p>	<p>Vol. II Pg. B-121</p>
<p>Iseler, L. (1998). Piloted simulator investigation of category A civil rotorcraft terminal area cockpit displays. <i>Journal of the American Helicopter Society, 43</i>(3), 185-194.</p> <p>A piloted simulation experiment was conducted in the NASA Ames Research Center Vertical Motion Simulator as a preliminary investigation of the use of integrated cockpit displays in terminal area operations for Category A civil rotorcraft. Category A is the transport category of rotorcraft which are required to be able to recover from an engine failure and continue flying. A UH-60 Black Hawk model was used for the simulation, with modifications made to the power available to simulate a civil rotorcraft. Hovering backups were flown from a confined area, raised vertiport site to a takeoff decision point (TDP), followed by normal flyout. Pilots flew the task with the standard Black Hawk instrument set of with one of two integrated formats presented on a color, panel-mounted display. Engine failures were randomly inserted slightly before and slightly after the TDP. The pilot was instructed to make a visual landback to the pad when an engine failed prior to reaching the TDP and to continue the flyout when an engine failed after passing through the TDP. Weather conditions were varied from calm, clear conditions to low visibility and ceilings, with crosswinds and turbulence. Evaluations were conducted with seven pilots. Objective and subjective data describing task performance and pilot workload were collected. It was hypothesized that even without the benefit of display assistance, pilots would achieve better performance handling an engine failure by using integrated displays during the all-engines-operating back up phase prior to the engine failure occurring. As expected, the pilots were able to maintain more precise flight path control during the backup with the integrated display. This precise control, in turn, placed the pilot in a better situation from which to handle an engine failure. Pilot recognition of the TDP location was also highly improved with an integrated display. Emergency landbacks, on runs using the integrated display during the backup portion, were all performed within the specified tolerances. Some of the landbacks using the standard instrument set, however, exceeded the adequate performance parameters. Cooper-Harper Handling Qualities Ratings confirmed that pilot workload was reduced and pilots were able to fly more consistently within the desired performance parameters with the integrated display than with the standard instruments and visual cues. Piloted simulators Civil rotorcraft Black Hawk helicopter Panel mounted display Engine failure Takeoff decision point</p>	<p>Vol. II Pg. B-128</p>

Citation	Volume Page No.
<p>Klein, P. D. & Nicks, C. O. (1998). Flight director and approach profile development for civil tiltrotor terminal area operations. In <i>Proceedings of the 1998 54th Annual Forum—American Helicopter Society</i>, 2, 1120-1133.</p> <p>Flight director guidance, display symbology, and approach profiles have been developed and evaluated at Bell Helicopter Textron Inc. using the XV-15 experimental tiltrotor aircraft. The aircraft was equipped with a limited authority digital stability and control augmentation system (SCAS) developed at Bell, a discrete nacelle control system that moves the nacelles to selected positions in response to pilot commands, a differential global positioning system (DGPS) airborne receiver and antennas, a flight director computer, and a liquid crystal display (LCD) in the left side of the instrument panel. Carrier phase differential corrections were used in the DGPS to determine aircraft position, altitude, and groundspeed. Flight director guidance laws were developed to control aircraft flight path, groundspeed, and configuration. Approach profiles that included reconversions from airplane to helicopter mode and glideslope angles of 6 and 9 degrees were evaluated. The aircraft and flight director system were used for the NASA/ARMY/Bell XV-15 acoustic test in June 1997 where profiles involving segmented glideslopes were executed. The profiles executed during the flight test evaluations and acoustic test are the first instrument flight rules (IFR) precision approaches flown in a tilt-rotor aircraft. Flight director guidance Stability and control augmentation systems (SCAS) Instrument flight rules Civil tiltrotor aircraft</p>	<p>Vol. II Pg. B-131</p>
<p>Kreitmair-Steck, W., Wolfram, A. P., & Schuster, A. (1996). Heliradar: the pilot's eye for flights in adverse weather conditions. <i>Enhanced and Synthetic Vision 1996</i>, 2736, 35-41.</p> <p>In 1992 Eurocopter Deutschland and Daimler-Benz Aerospace started a research program to investigate the feasibility of a piloting radar based on the so-called ROSAR technology: HELIRADAR. While available radar instruments are not capable of guiding a helicopter pilot safely under poor visibility conditions due to lack of resolution and lack of height information, ROSAR technology, a Synthetic Aperture Radar based on Rotating antennas, has been the promise to overcome these deficiencies. Based on ROSAR technology HELIRADAR has been designed to provide a video-like image whose resolution is good enough to safely guide a helicopter pilot under poor visibility conditions to the target destination. To yield very high resolution a similar effect as for Synthetic Aperture Radar systems can be achieved by means of a rotating antenna. This principle is especially well suited for helicopters, since it allows for a stationary carrier platform. Additional rotating arms with antennas integrated in their tips are mounted on top of the rotating rotor head. While rotating, the antenna scans the environment from various visual angles without assuming a movement of the carrier platform itself. The complete transmitter/receiver system is fixed mounted on top of the rotating axis of the helicopter. The antennas are mounted at the four ends of a cross and rotate at the same speed as the rotor. The received radar signals are transferred through the center of the rotor axis down into the cabin of the helicopter, where they are then processed in the PolyCluster type high performance digital signal processor. Heliradar</p>	<p>Vol. II Pg. B-141</p>
<p>Dennison, T. W. & Gawron, V. J. (1996). Tools and methods for helicopter user interface development and test. In <i>Proceedings of the 1996 52nd Annual Forum—American Helicopter Society</i>, 2, 1141-1147.</p> <p>The various human factor tools and test methods used in the development and</p>	<p>Vol. II Pg. B-145</p>

Citation	Volume Page No.
<p>design of helicopters are discussed to provide an inventory of these tools within a framework based on the iterative and recursive nature of the design process, not step-by-step instructions. Inexpensive, low fidelity examples, as well as very expensive representations of the product in use in its environment, are presented. Distinction was made between tools that test the physical crew station interface and tools that test the perceptual and cognitive interface. The strengths and limitations of each tools are also discussed, including some sources, cost and references. Helicopter user interface</p>	
<p>Kimberlin, R. D. (1996). Civil single pilot IFR certification—procedures pitfalls. In <i>Proceedings of the 1996 52nd Annual Forum—American Helicopter Society</i>, 2, 971-978.</p> <p>This paper describes the procedures used and problems encountered during the certification of a McDonnell-Douglas MD-369E helicopter for single pilot instrument flight. To maximize the utilization of the private helicopter, it should be certified for all weather operation. It can be accomplished for a single pilot without all axis stability augmentation, provided that adequate instrument displays are used and that human factors are considered to reduce pilot workload. This project demonstrated that current IFR certification regulations are not formulated for light helicopters and may present roadblocks to certification. However, it also demonstrated that single pilot IFR certification with minimum stability augmentation is possible and can offer potential safety benefits. McDonnell Douglas MD 369E helicopters Single pilot instrument flight Instrument flight rules (IFR)</p>	<p>Vol. II Pg. B-145</p>
<p>Bhanu, B., Das, S., Roberts, B., & Duncan, D. (1996). System for obstacle detection during rotorcraft low altitude flight. <i>IEEE Transactions on Aerospace and Electronic Systems</i>, 32(3), 875-897.</p> <p>An airborne vehicle such as a rotorcraft must avoid obstacles like antennas, towers, poles, fences, tree branches, and wires strung across the flight path. Automatic detection of the obstacles and generation of appropriate guidance and control actions for the vehicle to avoid these obstacles would facilitate autonomous navigation. The requirements of an obstacle detection system for rotorcraft in low-altitude Nap-of-the-Earth (NOE) flight based on various rotorcraft motion constraints is analyzed here in detail. It argues that an automated obstacle detection system for the rotorcraft scenario should include both passive and active sensors to be effective. Consequently, it introduces a maximally passive system which involves the use of passive sensors (TV, FLIR) as well as the selective use of an active (laser) sensor. The passive component is concerned with estimating range using optical flow-based motion analysis and binocular stereo. The optical flow-based motion analysis that is combined with on-board inertial navigation system (INS) to compute ranges to visible scene points is described. Experimental results obtained using land vehicle data illustrate the particular approach to motion analysis. Obstacle detection system Rotorcraft Active sensors Passive sensors Motion analysis Binocular stereo</p>	<p>Vol. II Pg. B-152</p>
<p>Weiland, M. Z., Convery, B. A., Zaklad, A. L., Zachary, W. W., Fry, C. A., & Voorhees, J. W. (1993). Active man machine interface for advanced rotorcraft. In <i>Proceedings of the 37th Annual Meeting of the Human Factors and Ergonomics Society</i>, 2, 1032.</p> <p>The proliferation of digital avionic information presented to pilots has produced a critical need for intelligent avionic information management, particularly in the area of Caution, Warning, and Advisory (CWA) systems. This demonstration</p>	<p>Vol. II Pg. B-175</p>

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<p>illustrates the role of an Active Man Machine Interface (AMMI) in the context of CWA systems in rotorcraft of the future. The basis of the AMMI's intelligence demonstrated here is provided by a cognitive model that 1) prunes the alert stream to only those messages that have meaning to the pilot depending on the tactical context, and 2) provide context-sensitive advice on the basis of the tactical context. The CWA AMMI is currently being designed using COGNET, an cognitive modeling methodology (Zachary, 1989), and implemented using BATON, a set of software tools used to implement and embed COGNET models into existing systems (Zachary et al, 1991). Rotorcraft Digital avionic information Active man machine interface</p>	
<p>Wilkins, R. R. (1990). Rotorcraft human factors man...machine...environment. <i>SAE Transactions 1990, 99</i>, Section 1, 2185-2209.</p> <p>Some aspects of Human Factors have long been a neglected area in rotorcraft design. This is true of such areas not directly influenced by motion and workload studies: the areas of human factors missing from the domain of human factors are those not included in the engineering set, but in the psychological and physiological set. Rotorcraft human factors issues are many of the same developed or determined for the aircraft/airplane category and can be divided into groups such as the man, machine, environment. Included are the issues of operating criteria (environment) of the rotorcraft and its pilots, design criteria to aid that pilot to alleviate stress and enable a functional cockpit (machine), and the issues of how best to train the pilot (man), mentally and physically, to accomplish the tasks set before him. Systems such as aircraft design and operation, crew physiology and training and airspace management need to be revamped and updated. Solutions must be developed and implemented to better design, man, train and utilize rotorcraft in the future. This will take a coordinated effort by the regulatory agencies and the industry. Rotorcraft human factors Fly-by-wire digital automatic flight controls Airspace management Multifunction displays Rotorcraft design</p>	<p>Vol. II Pg. B-181</p>
<p>Schroeder, J. A. & Merrick, V. K. (1992). Control and display combinations for blind vertical landings. <i>Journal of Guidance, Control, and Dynamics</i>, 15(3), 751-760.</p> <p>Several hover control and display concepts were evaluated in flight on a variable-stability helicopter. The control and display concepts enable precise hover maneuvers, station keeping, and vertical shipboard landings in zero-visibility conditions and until now have been evaluated only in piloted simulations. A new display design method is presented that attempts to attain the same pilot-vehicle performance regardless of the level of control augmentation. The display design method was first examined analytically with the control dynamics in the context of the pilot's desired guidance strategy. Then, while fully hooded, three pilots performed landing-pad captures followed by vertical landings with attitude-rate-command/attitude-hold, attitude-command/attitude-hold, and translational-velocity-command control systems. Of the 28 piloted blind landings, 25 were within 5 ft and 14 were within 2 ft of the specified touchdown point. Blind landing capability All weather approaches Vertical shipboard landings</p>	<p>Vol. II Pg. B-181</p>
<p>Eshow, M. M. (1992). Flight investigation of variations in rotorcraft control and display dynamics for hover. <i>Journal of Guidance, Control, and Dynamics</i>, 15(2), 482-490.</p> <p>This paper describes a flight investigation of the handling qualities issues associated with variations in display dynamics for varying levels of vehicle augmentation. The experiment was conducted on the NASA/Array CH-47B</p>	<p>Vol. II Pg. B-188</p>

Variable-Stability Research Helicopter using its model-following control system and a color, panel-mounted display. A display law design method developed and flight tested previously was refined and expanded to account for guidance effects. Specifically, for rate, attitude, and velocity command vehicle response types, both integrator-like and gain-like display controlled element dynamics were evaluated in two hovering tasks conducted in simulated zero-visibility conditions. The tasks were performed both with and without automation of the vertical and directional axes to assess the impact of divided attention on performance and work load. Quantitative and subjective data describing the pilots' ability to perform the tasks were collected and analyzed, and pilot-vehicle-display dynamics were identified. Results indicated that gain-like display dynamics were generally preferred and resulted in better inner-loop tracking and higher inner-loop crossover frequencies, while not degrading outer-loop position performance. Display Dynamics Display Law Design Method Hover Pilot Vehicle Display Dynamics Gain Like Display Dynamics Display Format

Swenson, H. N. (1991). Computer aiding for low-altitude helicopter flight. In *47th Annual Forum Proceedings—American Helicopter Society*.

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A computer-aiding concept for low-altitude helicopter flight has been developed and evaluated in a real-time piloted simulation. The concept included an optimal control trajectory-generation algorithm based on dynamic programming, and a head-up display (HUD) presentation of a pathway-in-the-sky, a phantom aircraft, and flight-path vector/predictor symbol. The trajectory-generation algorithm uses knowledge of the global mission requirements, a digital terrain map, aircraft performance capabilities, and advanced navigation information to determine a trajectory between mission waypoints that minimizes threat exposure by seeking valleys. The pilot evaluation was conducted at NASA Ames Research Center's Sim Lab facility in both the fixed-base Interchangeable Cab (ICAB) simulator and the moving-base Vertical Motion Simulator (VMS) by pilots representing NASA, the U.S. Army, and the U.S. Air Force. The pilot manually tracked the trajectory generated by the algorithm utilizing the HUD symbology. They were able to satisfactorily perform the tracking tasks while maintaining a high degree of awareness of the outside world. Low-Altitude Helicopter Flight Real-Time Piloted Simulation Head-Up-Display (HUD) Trajectory Generation Algorithm Helicopter Maneuvering Penetration Guidance Algorithm

Geist, D. & Fried, Z. (1991). Functionally integrated aircraft instrumentation for the next generation commercial helicopter. In *47th Annual Forum Proceedings—American Helicopter Society*, 1057-1065.

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An Integrated Instrumentation Display System (IIDS) was designed to meet the aircraft instrumentation requirements of Federal Aviation Regulation, Part 27, certification of commercial light helicopters. Criteria were defined that would allow an assessment of selected functions for integration into one unit. The goal was to provide a compact instrumentation system to monitor and display the performance of various aircraft subsystems. An aircraft subsystem monitoring feature provides a means to acquire knowledge of the health of the aircraft subsystems. Engine performance can be monitored in real-time, which allows aircraft operators to better schedule repair/overhaul activities. Also, maintenance personnel can transfer collection of aircraft operational information to a ground based computer for determining trending and maintenance actions. Vibration monitoring is provided to the helicopter user with a simple and convenient means of acquiring the information needed to minimize vibration caused by mass and

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<p>aerodynamic imbalance in the rotor and NOTAR fan system. The display consists of color, Liquid Crystal Display (LCD) panels which allows the flexibility of integrating the specified sensor data and caution/warning information onto a display packaged as one unit. Functionally Integrated Aircraft Instrumentation Liquid Crystal Displays Commercial Light Helicopters NOTAR Fan System Repair/Overhaul Activities</p>	
<p>Stringer, P. G. (1990). <i>Opportunities to improve helicopter cockpit displays; a pilot's perspective</i>. Aerospace Technology Conference and Exposition, Oct. 1-4, 19901. Warrendale, PA: Society of Automotive Engineers.</p> <p>Human error remains as the major cause/factor identified in both civil and military helicopter accident reports. This paper identifies some opportunities for improving helicopter operational performance and reduce human error accidents based on critical event analysis of accident reports and associated operational requirements. Analysis identified areas where the pilot was overloaded and information available to the pilot was inadequate for the particular situation. These results suggest several areas where the task demands could be made more compatible with the pilot capabilities for improved performance, fewer errors, and timely decisions in critical situations. Two areas addressed are power/flight performance management and obstacle avoidance. This information can be useful in developing helicopter automation and electronic display systems that improve safety and mission reliability. Helicopter Cockpit Displays Pilot Error Critical Events Analysis Army Helicopter Accidents</p>	<p>Vol. II Pg. B-199</p>
<p>Hess, R. A. & Gorder, P. J. (1990). Design and evaluation of a cockpit display for hovering flight. <i>Journal of Guidance, Control, and Dynamics</i>, 13(3), 450-457.</p> <p>A simulator evaluation of a cockpit display format for hovering flight is described. The display format is based on the position-velocity-acceleration representation similar to that used in the Pilot Night Vision System in the Army AH-64 helicopter. By only varying the nature of the display law driving the 'primary' indicator in this format, i.e. the acceleration symbol, three candidate displays are created and evaluated. These range from a status display in which the primary indicator provides true acceleration information, to a command display in which the primary indicator provides flight director information. Simulation results indicate that two of the three displays offer performance and handling qualities that make them excellent candidates for future helicopter cockpit display systems. Hovering</p>	<p>Vol. II Pg. B-199</p>
<p>Ram, B. & Skinner, L. (1986). Prioritization of information for a helicopter pilot. <i>Proceedings of the 1986 IEEE International Conference on Systems, Man and Cybernetics</i> (pp. 1238-1241). Atlanta, GA: IEEE.</p> <p>Recent trends in helicopter technology have increased the information-processing content of a helicopter pilot's task. One aspect of this information-processing role is the prioritization of the information presented to the pilot during flight. A description is given of work in progress on a project to develop a methodology for this prioritization., INFORMATION PRIORITIZATION HELICOPTER PILOTS</p>	<p>Vol. II Pg. B-205</p>
<p>Stiles, L. (1985). Sikorsky aircraft crew station technology research helicopter. <i>Fourth Aerospace Behavioral Engineering Technology Conference Proceedings</i> (pp. 143-150). Warrendale, PA: Society of Automotive Engineers.</p>	<p>Vol. II Pg. B-205</p>

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<p>Sikorsky Aircraft has developed a new research helicopter dedicated to the study of crew station technology. A high visibility single seat cockpit has been added to an S-76 airframe just forward of the existing cockpit. The new cockpit is linked to the aircraft systems via a variable stability fly-by-wire flight control system and is equipped with various display media, including touch sensitive CRTs, a voice interactive system, head-up display, and a visually-coupled wide field of view helmet-mounted display system. The aircraft can be operated autonomously from the new crew station, with an independent safety pilot position retained at the original right pilot station. This aircraft will permit the evaluation of advanced control and display concepts in the agile S-76 air vehicle under a full range of flight conditions. CREW STATIONS ROTORCRAFT DESIGN FLY-BY-WIRE FLIGHT CONTROL RESEARCH COCKPIT</p>	
<p>Chais, R. I. & Simpson, W. E. (1985). <i>Investigation of technology needs for avoiding helicopter pilot error related accidents – Final report</i>. NASA Contractor Report (NSCRAQ 0565-7059).</p> <p>This report documents the study effort to investigate pilot error related accidents in helicopters to identify areas in which new technology could reduce or eliminate the underlying causes of these human errors. The study drew from the aircraft accident data base at the U. S. Army Safety Center at Ft. Rucker, Alabama, as the source of data on helicopter accidents. The analytical approach involved review of a randomly selected sample of 110 accident records on a case-by-case basis to assess the nature of problems which need to be resolved and applicable technology implications. The report identifies six technology areas in which there appears to be a need for new or increased emphasis.</p>	<p>Vol. II Pg. B-214</p>
<p>Green, D. L. (1982). Cockpit integration from a pilot's point of view. <i>Helicopter Handling Qualities, Proceedings of a Specialists Meeting</i> (pp. 171-181). Washington, DC: NASA Science and Technology Information Branch.</p> <p>HELICOPTER COCKPIT AND CONTROL SYSTEM DESIGN IMPROVEMENT OF PILOT PERFORMANCE MARGINAL AND INSTRUMENT FLIGHT CONDITIONS HELICOPTER USE OF COLLECTIVE NEED FOR GOOD DOWNWARD PERIPHERAL VISIBILITY HORIZONTAL GLARE SHIELD PROFILE</p>	<p>Vol. II Pg. B-218</p>
<p>Lebacqz, J. V., Forrest, R. D., Gerdes, R. M., & Merrill, R. K. (1981). Investigation of control, display, and crew-loading requirements for helicopter instrument approach. <i>Collection of Technical Papers – AIAA Guidance and Control Conference</i> (pp. 281-295). New York, NY: AIAA.</p> <p>No Abstract Available</p>	<p>Vol. II Pg. B-219</p>
<p>Entin, E. B. (1998). The effects of dynamic updating of tactical information on situation awareness and performance in an attack helicopter domain. In <i>SMC'98 Conference Proceedings, Vol. 4</i>, pp. 3602-3607. New York, NY: IEEE.</p> <p>As part of a research program investigating tactical situation awareness (SA) in attack helicopter missions, we investigated alternative methods for displaying dynamically changing tactical information to maintain high levels of SA and task performance. We conducted two experiments in which we investigated display features that could improve SA and performance, including automatic updating of enemy and friendly unit locations, and availability of unit history information. Subjects reported</p>	<p>Vol. II Pg. B-231</p>

higher awareness of tactical changes with periodic updates than continual real-time updates, but the periodic updates did not help the crew ascertain which units had moved since the previous update, a very important aspect of maintaining awareness of enemy and friendly status and determining enemy intent. We also compared textual and graphical methods for displaying traces of unit movements, but found no differences in SA or performance between the two methods. The research raised a number of cognitive issues associated with dynamic updating of tactical information and the display of unit histories

- Weiland, M. Z., Convery, B. A., Zaklad, A. L., Zachary, W. W., Fry, C. A., & Vorhees, J. W. (1993). Active man machine interface for advanced rotorcraft. In *Proceedings of the 37th Annual Meeting of the Human Factors and Ergonomics Society* (p. 1032). Santa Monica, CA: Human Factors and Ergonomics Society.

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The proliferation of digital avionic information presented to pilots has produced a critical need for intelligent avionic information management, particularly in the area of caution, warning and advisory (CWA) systems. This demonstration illustrates the role of an active man-machine interface (AMMI) in the context of CWA systems in rotorcraft of the future. The basis of the AMMI's intelligence is provided by a cognitive model that (1) prunes the alert stream to only those messages that have meaning to the pilot depending on the tactical context, and (2) provides context-sensitive advice on the basis of the tactical context. The CWA AMMI is currently being designed using COGNET, a cognitive modeling methodology (Zachary, 1989), and implemented using BATON, a set of software tools used to implement and embed COGNET models into existing systems (Zachary et al., 1991)

- Harwood, K. (1989). Cognitive perspectives on map displays for helicopter flight. In *Proceedings of the Human Factors Society 33rd Annual Meeting* (pp. 13-17). Santa Monica, CA: Human Factors Society.

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Computer generated map displays in the present study were configured according to previous research on maps, navigational problem solving, and spatial cognition in large scale environments. Interest centered on the representation of different spatial relationships that would best support helicopter navigational problem solving. One map display emphasized the global relationships between objects in the environment. The other map showed the pilot's relationship to objects as he traveled through the environment. Twenty skilled pilots used the maps to complete several navigational tasks that occurred within a realistic simulation program tailored for helicopter navigation. Findings indicate that the type of task and mode of flight (low level or Nap of the Earth (NOE)) are important determinants of map display effectiveness

- Roscoe, S. N., Tatro, J. S., & Trujillo, E. J. (1984). The role of human factors in VTOL aircraft display technology. *Displays, Technology and Applications*, 5(3), 149-153.

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Advances in avionics have made possible the implementation of several display and control design principles that were once

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<p>impractical with conventional electromechanical display and control technology. A system approach is applied to the design and evaluation of integrated forward-looking and downward-looking electronic pictorial displays for VTOL aircraft including helicopters. Effects of critical display and control design variables in horizontal displays for vertical and translational flight are determined experimentally</p>	
<p>Hoh, R. H. & Ashkenas, I. L. (1981). Effect of reduced visibility on VTOL handling quality and display requirements. <i>Journal of Guidance and Control</i>, 4(2), 171-176.</p> <p>Available data have been used to quantify the intuitive idea that acceptable levels of pilot workload (Cooper-Harper ratings and commentary) for the low-speed and hover task are dependent on outside visibility level, augmentation, and cockpit displays. An outside visual cue scale is developed to quantify the environmental conditions for the intended mission in a more fine-grained manner than simply specifying visual meteorological conditions or instrument meteorological conditions. A tentative handling quality criterion for low speed and hover is developed in terms of augmentation, outside visual cue level, and cockpit display sophistication. In general, the criterion indicates that rate augmentation is acceptable only in good visibility. Low speed and hover in degraded levels of visibility require attitude augmentation which must be upgraded to a translational rate command system in zero visibility. Finally, there is evidence that the most critical flight phase may be final deceleration to hover as opposed to steady hovering</p>	<p>Vol. II Pg. B-306</p>
<p>Strother, D. D. & Upton, H. W. (1975). Research on displays for V/STOL low-level and IMC operations. In <i>AGARD Conference Proceedings No. 148 on Guidance and Control of V/STOL Aircraft and helicopters at Night in Poor Visibility</i> (pp. 18/1-18/11). Neuilly sur Seine, France: AGARD.</p> <p>A review is given of the result of several research studies covering cockpit displays and their effect on the performance of helicopter pilots. Conducted at Bell Helicopter Company, these studies evaluated displays used for the guidance and control of helicopters at night and in restricted visibility, especially for operations at extremely low altitudes</p>	<p>Vol. II Pg. B-311</p>
<p>McConkey, E. D. & Ace, R. E. (1982). <i>Instrument approach aids for helicopters</i> (DOT/FAA/RD-82/6). Washington, DC: Federal Aviation Administration Systems Research and Development Service.</p> <p>This report identifies the various instrument approach procedures that are available to the helicopter operator. Emphasis is placed on the recently approved Helicopter Only procedures, the criteria for which are contained in Chapter 11 of the Terminal Instrument Procedures Handbook. The objective of this study was to examine currently available solutions to helicopter approach needs. The study also covers new and innovative solutions to helicopter approach requirements. This was accomplished by: Identifying the various navigation aids now being used which may have general application to U.S. helicopter operations. Describing typical locations of use, typical approach procedures, and</p>	<p>Vol. II Pg. B-330</p>

minimums for each of these aids. Providing estimated equipment costs for both the ground and airborne portions of these systems. Discussing the rationale used to support the use of a particular aid at a particular location or in a specific operational environment. Results of this investigation are presented in the form of a series of helicopter instrument approach options for the user. (Author)

Society of Automotive Engineers (1995). *Integration of vertical flight aircraft into the national airspace system (SAE Standard)*. Warrendale, PA: Author.

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The purpose of this document is to provide the propulsion engineer's recommendations for the instrumentation that is required for the safe operation and maintenance of turbine engines as installed in helicopters. It should be used as a guide for cockpit layout, as well as a reference for maintenance considerations throughout the propulsion area. Propulsion instruments should receive attention early in the design phase of the helicopter. within the scope of this document.

Decker, W. A., Bray, R. S., Simmons, R. C. & Tucker, G. E. (1993). Evaluation of two cockpit display concepts for civil tiltrotor instrument operations on steep approaches. In *Its Piloting Vertical Flight Aircraft: A Conference on Flying Qualities and Human Factors* (pp. 433-452). Moffett Field, CA: NASA Ames Research Center.

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A piloted simulation experiment was conducted using the NASA Ames Research Center Vertical Motion Simulator to evaluate two cockpit display formats designed for manual control on steep instrument approaches for a civil transport tiltrotor aircraft. The first display included a four-cue (pitch, roll, power lever position, and nacelle angle movement prompt) flight director. The second display format provided instantaneous flight path angle information together with other symbols for terminal area guidance. Pilots evaluated these display formats for an instrument approach task which required a level flight conversion from airplane-mode flight to helicopter-mode flight while decelerating to the nominal approach airspeed. Pilots tracked glide slopes of 6, 9, 15 and 25 degrees, terminating in a hover for a vertical landing on a 150 feet square vertipad. Approaches were conducted with low visibility and ceilings and with crosswinds and turbulence, with all aircraft systems functioning normally and were carried through to a landing. Desired approach and tracking performance was achieved with generally satisfactory handling qualities using either display format on glide slopes up through 15 degrees. Evaluations with both display formats for a 25 degree glide slope revealed serious problems with glide slope tracking at low airspeeds in crosswinds and the loss of the intended landing spot from the cockpit field of view.

Hindson, W. S., Hardy, G. H., Tucker, G. E., & Decker, W. A. (1993). Piloting considerations for terminal area operations of civil tiltwing and tiltrotor aircraft. In *Its Piloting Vertical Flight Aircraft: A Conference on Flying Qualities and Human Factors* (pp. 393-410). Moffett Field, CA: NASA Ames Research Center.

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The existing body of research to investigate airworthiness, performance, handling, and operational requirements for STOL and V/STOL aircraft was reviewed for its applicability to the tiltrotor and tiltwing design concepts. The objective of this study was to help

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<p>determine the needs for developing civil certification criteria for these aircraft concepts. Piloting tasks that were considered included configuration and thrust vector management, glidepath control, deceleration to hover, and engine failure procedures. Flight control and cockpit display systems that have been found necessary to exploit the low-speed operating characteristics of these aircraft are described, and beneficial future developments are proposed.</p>	
<p>Hale, S. (1987). <i>Helicopter external vision requirements and visual display characteristics: A report/bibliography</i> (HEL-TN-6-87-REV-A). Aberdeen Proving Ground, MD: Human Engineering Laboratory.</p> <p>A literature review was conducted to examine helicopter external vision requirements and related visual display characteristics. Several articles are summarized in annotated bibliography format. A subsequent discussion section addresses the information contained in those articles as well as relevant information contained in other documents. Suggestions are made for future research.</p>	<p>Vol. II Pg. B-594</p>
<p>Abbink, F. J. (1985). <i>Systems, avionics and instrumentation of transport category helicopters</i> (NLR-MP-85066-U). Amsterdam, Netherlands: National Aerospace Lab.</p> <p>The development of helicopters for passenger transport is reviewed. The systems, avionics, and instrumentation of an S-76 transport helicopter used for offshore services are described. Developments in helicopter avionics are discussed.</p>	<p>Vol. II Pg. B-609</p>
<p>Formica, B. (1985). <i>Avionics system for future civil helicopters. Final report</i> (BMFT-FB-W-85-005). Munich, German: Messerschmitt-Boelkow-Blohm G.m.b.H.</p> <p>Avionics and visual aids systems were tested to determine their applicability to civil helicopters. Economical uses, compatibility with the cockpit layout, the effects on the crew regarding work strain, and their reliability and mission capability were studied. Visual aids based on infrared imagery and light amplifying devices; central displays; autonomous navigation systems; obstacle warning radar; and central control and display units were considered.</p>	<p>Vol. II Pg. B-620</p>
<p>Hartzell, E. J., Dunbar, S. L., Beveridge, R., & Cortilla, R. (1983). Helicopter pilot response latency as a function of the spatial arrangement of instruments and controls. In <i>Proceedings of the Annual Conference on Manual Control</i> (pp. 345-364). Moffett Field, CA: NASA Ames Research Center.</p> <p>This study addresses the question of the spatial arrangement of helicopter instruments and controls in terms of stimulus-response compatibility. The results indicate that in airspeed and altitude adjustment tasks the compatible placement of controls and displayed information may result in a significant time savings and reduced workload and therefore increased mission performance. Fitts' Law is used as a dependent measure to assess the performance of subjects in a discrete manual control task.</p>	<p>Vol. II Pg. B-660</p>
<p>Hoffman, W. C., Curry, R. E., Kleinman, D. L., Hollister, W. M., & Young, L. R. (1975). <i>Display/control requirements for VTOL aircraft</i> (NASA-CR-145026; ASI-TR-75-26). Burlington, MA: Aerospace Systems, Inc.</p>	<p>Vol. II Pg. B-796</p>

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<p>Quantitative metrics were determined for system control performance, workload for control, monitoring performance, and workload for monitoring. Pilot tasks were allocated for navigation and guidance of automated commercial V/STOL aircraft in all weather conditions using an optimal control model of the human operator to determine display elements and design.</p>	
<p>Clark, W. E. & Intano, G. P. (1975). <i>Helicopter display improvement study. Final report</i> (IFC-TN-75-1). Randolph AFB, TX: Instrument Flight Center.</p> <p>This Technical Note, IFC-TN-75-1, presents the results of the USAF Instrument Flight Center Helicopter Display Improvement Study (CDG-PFH-1). A representative cross-section of active duty Air Force Helicopter Pilots were sampled by means of a questionnaire. The returned questionnaires provide a data base of approximately 20% of the active helicopter force. Pilots responded to questions directed at their current instrument panels, as well as future panel designs with instrument location, lighting, and operation being addressed. Specific displays were also treated in that pilots were asked to rate their attitude indicators, altimeters, heading indicators and airspeed displays. The desirability of stability augmentation systems, as well as the priority the pilots place on augmenting the various axes is also established. The remaining questions treated helicopter flight directors, tape displays, navigation systems and the control and performance concept of instrument flying.</p>	<p>Vol. II Pg. B-844</p>
<p>Marsh, G. (2001). Too much too soon. Pilot information overload in military helicopters. <i>Defense Helicopter</i>, 20(1), 32, 34-36.</p> <p>Concepts related to the development of an intelligent, synthetic pilot's assistant are described. Assistance is structured in such a way as to mimic human behavior and provides mission support, "visual" support, and internal situational awareness. Pilots will thus be provided with a digital decision-maker for the mundane tasks, helping them to concentrate on crucial stages of the mission. (AIAA)</p>	<p>Vol. II Pg. B-930</p>
<p>Hoagland, M., Bordett, H., Chicoine, R., & Henschke, M. (2000). Human factors in the design of a glass cockpit for the SH-2G(A). In <i>AHS International Annual Forum, Vol. 1</i>, 479-486. Alexandria, VA: AHS International.</p> <p>The SH-2G(A) helicopter, produced for the Royal Australian Navy (RAN) by Kaman Aerospace Corp., is a major redesign of the USN SH-2G Super SeaSprite. The SH-2G(A) helicopter upgrade included the removal of a, 'analog gauge' cockpit design and the installation of an integrated multidisplay and multi-input environment - a 'glass cockpit'.</p> <p>Converting from a three-man crew for the USN SH-2G to the two-man crew for the RAN SH-2G(A) presented unique challenges for safe and efficient two-man crew operation. This paper addresses how the human factors process was applied for the two-man crew using existing, modified, and new controls and displays. (Author)</p>	<p>Vol. II Pg. B-939</p>
<p>Green, D. L. & Kimberlin, R. D. (1995). Helicopter unique instrument approaches – Trajectories, flying qualities, controls and displays. In <i>SAE 1994 Transactions, Journal of Aerospace, Vol 103</i>, 2189-2200. Warrendale, PA: Society of Automotive</p>	<p>Vol. II Pg. B-1036</p>

Engineers.

The paper presents an argument for combining the precision of GPS with robust slow speed agility of the helicopter to support the wide implementation of a helicopter precision track GPS (HPT-GPS) instrument approach. The autonomous nature of the approach suggests that it is particularly suited for use at small airports and heliports. This capability is then characterized as providing an affordable way to facilitate the integration of rotorcraft into the National Airspace System to facilitate commerce and emergency medical service to areas that are otherwise poorly served by aviation during inclement weather. The paper defines a new minimum approach airspeed (V(MAP)) which applies to the last segment of the approach. This segment involves a descent to a minimum descent altitude and continued flight to a Helicopter Visual Descent Point which is expected to be located 150 ft or more above or beyond the runway threshold. A series of charts is used to explain the relationship between V(MAP) and the current minimum airspeed for instrument flight. The paper concludes with a justification for displaying both ground speed and airspeed and suggests formats for both. (Author)

Tatro, J. S. & Roscoe, S. N. (1986). An integrated display for vertical and translational flight. Eight factors affecting pilot performance. *Human Factors*, 28, 11-120.

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As part of an overall research program to optimize both forward-looking and downward-looking tactical situation displays for all-weather instrument flight in vertical takeoff and landing (VTOL) aircraft, an integrated horizontal situation display was developed for both vertical and translational flight. This paper covers the developed and initial experimentation of the downward-looking portion of the overall display and control system. The effects of eight factors on pilot performance were tested, and a multiple regression model of VTOL pilot performance as a function of those eight factors was derived for each of three dependent performance measures. Factors having important effects were position error magnification, control order, prediction time, control gain, tracking mode, and several of their interactions. (Author)

Remington, R. W. & Wiener, E. L. (1984). Man-machine interface requirements – advanced technology. In *Its Technical Workshop: Advanced Helicopter Cockpit Design Concepts* (pp. 247-266). Moffett Field, CA: NASA Ames Research Center.

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Research issues and areas are identified where increased understanding of the human operator and the interaction between the operator and the avionics could lead to improvements in the performance of current and proposed helicopters. Both current and advanced helicopter systems and avionics are considered. Areas critical to man-machine interface requirements include: (1) artificial intelligence; (2) visual displays; (3) voice technology; (4) cockpit integration; and (5) pilot work loads and performance. (B.W.)

Hoh, R. H. & Ashkenas, I. L. (1979). Handling quality and display requirements for low speed and hover in reduced flight visibility. In *American Helicopter Society, Annual National Forum Proceedings*. Washington, DC: American Helicopter Society.

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A classification scheme has been developed to account for outside visual cues and cockpit displays in determining the required equivalent

Citation	Volume Page No.
<p>system forms for low speed and hover. Tentative criteria are presented in terms of a visibility scale which quantifies environmental conditions for the intended mission in a more fine-grained manner than simply specifying IMC or VMC. There are indications that rate and attitude systems may be used for partial IMC conditions but that a translational rate command (TRC) system is required for low speed and hover in zero visibility. In general, most experiments indicate that advanced displays are not a substitute for augmentation. Tentative limiting conditions are defined for rate and attitude systems, but more data are required to define handling qualities for TRC systems. Since the existing data base is primarily oriented toward command/response characteristics, definition of the limiting conditions for turbulence and large discrete wind shears also requires more data. ((Author))</p>	
<p>Sams, D. D. & Web, E. G. (1975). Pilot control/display factors for helicopters (PIFX-H). In <i>Survival and Flight Equipment Association, Annual Conference and Trade Exhibit</i> (pp. 109-113). Canoga Park, CA: Survival and Flight Equipment Association.</p> <p>A three-phase program for pilot control/display factors of helicopters is developed to investigate the full instrument potential of the helicopter and then improve the instrument flight capabilities within the helicopter operational mission environment. The study of Phase I baseline flying revealed the capabilities and deficiencies within the standard helicopter control-display system. The baseline study helped establish an initial configuration of refined controls and displays. Phase II is being conducted to evaluate individually each feature of the new controls and displays with the aim of reducing pilot workload and enhance performance efficiency. (S.D.)</p>	<p>Vol. II Pg. B-1516</p>
<p>Rolek, E. P. (1974). Control-display-stability-augmentation system for low visibility helicopter maneuvers. In <i>Proceedings of the 18th Annual Meeting of the Human Factors Society</i> (pp. 255-258). Santa Monica, CA: Human Factors and Ergonomics Society.</p> <p>Helicopters cannot currently use their unique capabilities under low or zero visibility conditions because they lack the necessary avionics. Rather than pursuing a fully automatic system, several systems (e.g., 3 axis flight director) were developed which were almost totally under manual control. This study used objective and subjective data to evaluate these systems under simulated zero visibility conditions for cruise and approach flight profiles. The data indicated that for almost all cases these systems increased performance and decreased workload when compared to using situation-only displays. ((Author))</p>	<p>Vol. II Pg. B-1517</p>

3.1.2 What would be acceptable pilot performance skills and abilities to conduct such flights?

Citation	Volume Page No.
<p>Billmann, F. R. & Shollenberger, S. (1989). <i>Helicopter visual segment approach lighting system (HALS) test report</i> (DOT/FAA/CT-TN89/21). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA326987)</p>	<p>Vol. I Pg. B-336</p>

The establishment of precision instrument approaches to heliports is hindered by the visual segment guidance which currently exists at most urban area heliports. In the visual segment area, inside and below the decision height (DH) location on precision approach, the pilot normally operates the helicopter uncued through visual reference to the landing environment. The unique handling qualities of helicopters may require enhanced visual segment guidance. The Heliport Versus Segment Approach Lighting System (HALS) has been developed to meet this requirement. However, until now, no flight data in conjunction with MLS approaches had been collected. This Technical Note reports on a test designed to obtain pilot performance subjective pilot data on the Helicopter Visual Segment Approach Lighting System (HALS). Results identify the performance measures which correlate with the pilot's ability to visually acquire a HALS equipped heliport. Conclusions state that HALS can support existing minima to heliports. Pilots reported unacceptable Cooper-Harper ratings for rate of closure and workload without HALS.

Weiss, R. M., Wolf, C. J., Erlichman, S. L., & Morrow, J. G. (1989). *Heliport surface maneuvering test results* (DOT/FAA/CT-TN88/30). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA214116)

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Pg. B-347

During late fall 1987 and early spring 1988 flight tests were conducted at the Federal Aviation Administration (FAA) Technical Center's National Concepts Development and Demonstration Heliport. The purpose of these tests was to measure pilot perception of helicopter tip clearances for parking and taxiing maneuvers and to measure pilot performance during these maneuvers. Over 100 parking and taxiing maneuvers were conducted using a UH-1H helicopter. The parking procedures were conducted under head, tail, and crosswind conditions, both with and without an obstacle in place. the taxiing procedures were carried out with a centerline, with only side markings, and with no ground markings. A ground-based laser tracker system was used to track the taxiing procedures. Pilot subjective data in reference to these maneuvers were collected via a post-flight questionnaire. Pilot interviews were conducted at heliports across the country. These interviews gathered pilot views concerning rotor tip clearances for parking and hover taxiing maneuvers, ground markings for parking operations, and hover taxiing heights. This report documents the results of this activity. It describes the data collection and analysis methodology and addresses objective as well as subjective issues. It provides statistical and graphical analysis of pilot performance and perception data and pilot subjective data. Keywords: Terminal flight facilities; Heliports; Heliport parking; Heliport taxiing; Rotor tip clearances.

Fleming, E. L. (1999). *Human factors error in a cue and symbol-saturated environment. (rotary wing mishaps)* (1999-695024-311). Dissertation Abstracts International: Section B: The Sciences & Engineering. Walden University, US.

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The purpose of this study was to increase the understanding of rotary wing flight mishaps by investigating classes of ambiguity in the human factors mishap environment. Human factors failings are often coupled with the interference of the interpretation of information, and a deterioration of situational awareness. The

researcher's interest was spurred by the relatively high percentage of catastrophic mishaps attributed to human failings. The mishap environments were treated as complex systems and subsystems, rather than as discrete phenomena in isolation. A multiple case study combined with hypothesis testing of data accumulated through content analysis was conducted on five rotary wing mishaps. Chi-square was utilized to analyze the prevalence of specific categories of noise factors in the five mishap environments. Noise for the purpose of this research was defined as any intervening variable that degraded the ability to receive or interpret critical situational information. The multiple case study and data analysis demonstrated that, in general, noise was a pervasive feature in all five of the selected mishap environments. In addition, this study suggested that the distribution of the sources of noise perceived by aircrews was appreciably different from that of the managers and supervisors. It was further suggested that the conflicting perceptual differences between supervisors and crews were the most significant noise factors to interfere with the processing of critical situational information. (PsycINFO Database Record (c) 2000 APA, all rights reserved)

Hart, S. G. (1988). Helicopter human factors. In E. L. Wiener & D. C. Nagel (Eds.), *Human Factors in Aviation* (pp. 591-638). San Diego, CA: Academic Press.

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Pg. B-24

The goal of this chapter is to review the many factors that affect the performance and workload of military and civilian helicopter pilots and to discuss significant deficiencies in research, design, and operational procedures /// typical helicopter flight tasks /// cockpit environment / vibration / noise / temperature /// helicopter controls /// information requirements / direct visual information / spatial disorientation (PsycINFO Database Record (c) 2000 APA, all rights reserved)

Tatro, J. S. & Roscoe, S. N. (1986). An integrated display for vertical and translational flight: Eight factors affecting pilot performance. *Human Factors*, 28(1), 101-120.

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Tested the effects of 8 factors on pilot performance and derived a multiple regression model of vertical takeoff and landing (VTOL) pilot performance as a function of those 8 factors for each of 3 dependent performance measures. Ss were 3 male pilots with no helicopter or other VTOL experience. Findings show that factors having important effects were Position Error Magnification, Control Order, Prediction Time, Control Gain, Tracking Mode, and several of their interactions. The present research represents the development and initial experimentation of the downward-looking portion of an overall display and control system for all-weather instrument flight in VTOL aircraft. (60 ref) (PsycINFO Database Record (c) 2000 APA, all rights reserved)

Simmons, R. R. (1979). Methodological considerations of visual workloads of helicopter pilots. *Human Factors*, 21(3), 353-367.

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Describes techniques and modifications developed for assessing visual performance/workload of pilots during helicopter

Citation	Volume Page No.
<p>operations. Although the corneal reflection technique for gathering eye movement data is not new, innovative modifications were developed to permit accurate data collection in this flight environment. (14 ref) (PsycINFO Database Record (c) 2000 APA, all rights reserved)</p>	
<p>Thackray, R. I. & Touchstone, R. M. (1988). An evaluation of the effects of high visual taskload on the separate behaviors involved in complex monitoring performance. <i>Aviation Space and Environmental Medicine</i>, 59(5), p. 483. No Abstract Available</p>	<p>Vol. II Pg. B-51</p>
<p>Legacqz, J. V., Gerdes, R. M., Forrest, R. D., & Merrill, R. K. (1981). Investigation of control, display, and crew-loading requirements for helicopter instrument approach. <i>Journal of Guidance and Control</i>, 4(6), pp. 614-622. No Abstract Available</p>	<p>Vol. II Pg. B-59</p>
<p>Dennison, T. W. & Gawron, V. J. (1996). Tools and methods for helicopter user interface development and test. In <i>Proceedings of the 1996 52nd Annual Forum—American Helicopter Society</i>, 2, 1141-1147. The various human factor tools and test methods used in the development and design of helicopters are discussed to provide an inventory of these tools within a framework based on the iterative and recursive nature of the design process, not step-by-step instructions. Inexpensive, low fidelity examples, as well as very expensive representations of the product in use in its environment, are presented. Distinction was made between tools that test the physical crew station interface and tools that test the perceptual and cognitive interface. The strengths and limitations of each tools are also discussed, including some sources, cost and references. Helicopter user interface</p>	<p>Vol. II Pg. B-145</p>
<p>Kimberlin, R. D. (1996). Civil single pilot IFR certification—procedures pitfalls. In <i>Proceedings of the 1996 52nd Annual Forum—American Helicopter Society</i>, 2, 971-978. This paper describes the procedures used and problems encountered during the certification of a McDonnell-Douglas MD-369E helicopter for single pilot instrument flight. To maximize the utilization of the private helicopter, it should be certified for all weather operation. It can be accomplished for a single pilot without all axis stability augmentation, provided that adequate instrument displays are used and that human factors are considered to reduce pilot workload. This project demonstrated that current IFR certification regulations are not formulated for light helicopters and may present roadblocks to certification. However, it also demonstrated that single pilot IFR certification with minimum stability augmentation is possible and can offer potential safety benefits. McDonnell Douglas MD 369E helicopters Single pilot instrument flight Instrument flight rules (IFR)</p>	<p>Vol. II Pg. B-145</p>
<p>Wilkins, R. R. (1990). Rotorcraft human factors man...machine...environment. <i>SAE Transactions 1990</i>, 99, Section 1, 2185-2209. Some aspects of Human Factors have long been a neglected area in rotorcraft design. This is true of such areas not directly influenced by motion and workload studies: the areas of human factors missing from the domain of human factors are those not included in the engineering set, but in the psychological and physiological set. Rotorcraft human factors issues are many of the same developed or determined for the aircraft/airplane category and can be divided</p>	<p>Vol. II Pg. B-181</p>

into groups such as the man, machine, environment. Included are the issues of operating criteria (environment) of the rotorcraft and its pilots, design criteria to aid that pilot to alleviate stress and enable a functional cockpit (machine), and the issues of how best to train the pilot (man), mentally and physically, to accomplish the tasks set before him. Systems such as aircraft design and operation, crew physiology and training and airspace management need to be revamped and updated. Solutions must be developed and implemented to better design, man, train and utilize rotorcraft in the future. This will take a coordinated effort by the regulatory agencies and the industry. Rotorcraft human factors Fly-by-wire digital automatic flight controls Airspace management Multifunction displays Rotorcraft design

Eshow, M. M. (1992). Flight investigation of variations in rotorcraft control and display dynamics for hover. *Journal of Guidance, Control, and Dynamics*, 15(2), 482-490.

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This paper describes a flight investigation of the handling qualities issues associated with variations in display dynamics for varying levels of vehicle augmentation. The experiment was conducted on the NASA/Array CH-47B Variable-Stability Research Helicopter using its model-following control system and a color, panel-mounted display. A display law design method developed and flight tested previously was refined and expanded to account for guidance effects. Specifically, for rate, attitude, and velocity command vehicle response types, both integrator-like and gain-like display controlled element dynamics were evaluated in two hovering tasks conducted in simulated zero-visibility conditions. The tasks were performed both with and without automation of the vertical and directional axes to assess the impact of divided attention on performance and work load. Quantitative and subjective data describing the pilots' ability to perform the tasks were collected and analyzed, and pilot-vehicle-display dynamics were identified. Results indicated that gain-like display dynamics were generally preferred and resulted in better inner-loop tracking and higher inner-loop crossover frequencies, while not degrading outer-loop position performance. Display Dynamics Display Law Design Method Hover Pilot Vehicle Display Dynamics Gain Like Display Dynamics Display Format

Swenson, H. N. (1991). Computer aiding for low-altitude helicopter flight. In *47th Annual Forum Proceedings—American Helicopter Society*.

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A computer-aiding concept for low-altitude helicopter flight has been developed and evaluated in a real-time piloted simulation. The concept included an optimal control trajectory-generation algorithm based on dynamic programming, and a head-up display (HUD) presentation of a pathway-in-the-sky, a phantom aircraft, and flight-path vector/predictor symbol. The trajectory-generation algorithm uses knowledge of the global mission requirements, a digital terrain map, aircraft performance capabilities, and advanced navigation information to determine a trajectory between mission waypoints that minimizes threat exposure by seeking valleys. The pilot evaluation was conducted at NASA Ames Research Center's Sim Lab facility in both the fixed-base Interchangeable Cab (ICAB) simulator and the moving-base Vertical Motion Simulator (VMS) by pilots representing NASA, the U.S. Army, and the U.S. Air Force. The pilot manually tracked the trajectory generated by the algorithm utilizing the HUD symbology. They were able to satisfactorily perform the tracking tasks while maintaining a high degree of awareness of the outside world. Low-Altitude Helicopter Flight Real-Time Piloted Simulation Head-Up-Display (HUD) Trajectory Generation Algorithm Helicopter Maneuvering Penetration Guidance Algorithm

Citation	Volume Page No.
<p>Ram, B. & Skinner, L. (1986). Prioritization of information for a helicopter pilot. <i>Proceedings of the 1986 IEEE International Conference on Systems, Man and Cybernetics</i> (pp. 1238-1241). Atlanta, GA: IEEE.</p> <p>Recent trends in helicopter technology have increased the information-processing content of a helicopter pilot's task. One aspect of this information-processing role is the prioritization of the information presented to the pilot during flight. A description is given of work in progress on a project to develop a methodology for this prioritization., INFORMATION PRIORITIZATION HELICOPTER PILOTS</p>	<p>Vol. II Pg. B-205</p>
<p>Hess, R. A. & Chan, K. K. (1986). Model of the human's use of visual field cues in nap-of-the-earth flight (pp. 875-885). <i>Collection of Technical Papers – AIAA Guidance, Navigation and Control Conference</i>. New York, NY: AIAA.</p> <p>A model for the human pilot's use of visual field cues for vehicular control in nap-of-the-earth flight is quantified and combined with a structural model of the human pilot. The model represents a description of preview control for this flight task. Manned simulation and flight test experiments for low altitude lateral-directional maneuvering provide corroborative data for the modeling approach. The model represents a qualitative as well as a quantitative method for analyzing relevant perceptual factors in low altitude vehicular control. NAP-OF-THE-EARTH FLIGHT VISUAL FIELD CUES FLIGHT TASKS PREVIEW CONTROL LATERAL-DIRECTIONAL MANEUVERING HUMAN PILOTS</p>	<p>Vol. II Pg. B-206</p>
<p>Hoh, R. H. (1985). Investigation of outside visual cues required for low-speed and hover (pp. 337-349). <i>Collection of Technical Papers – AIAA 12th Atmospheric Flight Mechanic Conference</i>. New York, NY: AIAA.</p> <p>The fundamental visual cues required to perform a stabilized hover are not currently well understood. Knowledge of these essential cues is required for the development of pilot displays for helicopter or VSTOL hover in low visibility and for visual systems used for ground based simulation. The primary objective of the work accomplished in this study has been to determine the viability of using experimental flight test techniques to identify the essential outside visual cues required to accomplish precision, aggressive low speed and hover tasks. VISUAL CUES HOVER SIMULATION COMPUTER GENERATED IMAGERY</p>	<p>Vol. II Pg. B-213</p>
<p>Chais, R. I. & Simpson, W. E. (1985). <i>Investigation of technology needs for avoiding helicopter pilot error related accidents – Final report</i>. NASA Contractor Report (NSCRAQ 0565-7059).</p> <p>This report documents the study effort to investigate pilot error related accidents in helicopters to identify areas in which new technology could reduce or eliminate the underlying causes of these human errors. The study drew from the aircraft accident data base at the U. S. Army Safety Center at Ft. Rucker, Alabama, as the source of data on helicopter accidents. The analytical approach involved review of a randomly selected sample of 110 accident records on a case-by-case basis to assess the nature of problems which need to be resolved and applicable technology implications. The report identifies six technology areas in which there appears to be a need for new or increased emphasis.</p>	<p>Vol. II Pg. B-214</p>
<p>Pausder, H. J. & Hummes, D. (1982). Flight tests for the assessment of task performance and control activity. <i>Helicopter Handling Qualities, Proceedings of a Specialists</i></p>	<p>Vol. II Pg. B-218</p>

Citation	Volume Page No.
<p><i>Meeting</i> (pp. 35-46). Washington, DC: NASA Science and Technology Information Branch.</p> <p>INFLUENCE OF PILOT AND HELICOPTER SYSTEM ON PERFORMANCE VISUAL DOLPHIN COURSE MINIMIZATION OF TIME AND ALTITUDE OVER OBSTACLES STATISTICAL EVALUATION PARAMETERS CONTROL ACTIVITY OF PILOTS ACHIEVED TASK PERFORMANCE</p>	
<p>Green, D. L. (1982). Cockpit integration from a pilot's point of view. <i>Helicopter Handling Qualities, Proceedings of a Specialists Meeting</i> (pp. 171-181). Washington, DC: NASA Science and Technology Information Branch.</p> <p>HELICOPTER COCKPIT AND CONTROL SYSTEM DESIGN IMPROVEMENT OF PILOT PERFORMANCE MARGINAL AND INSTRUMENT FLIGHT CONDITIONS HELICOPTER USE OF COLLECTIVE NEED FOR GOOD DOWNWARD PERIPHERAL VISIBILITY HORIZONTAL GLARE SHIELD PROFILE</p>	<p>Vol. II Pg. B-218</p>
<p>NATO Research & Technology Organization (1999). <i>Current aeromedical issues in rotary wing operations</i> (RTO-MP-19). Neuilly-sur-Seine, France: Author.</p> <p>The following topics were dealt with: training for helicopter operations; rotorcraft operations under different conditions; psycho-physiological aspects in rotary-wing operations; human factors and life support equipment; rotorcraft accident and crashworthiness</p>	<p>Vol. II Pg. B-226</p>
<p>Entin, E. B. (1998). The effects of dynamic updating of tactical information on situation awareness and performance in an attack helicopter domain. In <i>SMC'98 Conference Proceedings, Vol. 4</i>, pp. 3602-3607. New York, NY: IEEE.</p> <p>As part of a research program investigating tactical situation awareness (SA) in attack helicopter missions, we investigated alternative methods for displaying dynamically changing tactical information to maintain high levels of SA and task performance. We conducted two experiments in which we investigated display features that could improve SA and performance, including automatic updating of enemy and friendly unit locations, and availability of unit history information. Subjects reported higher awareness of tactical changes with periodic updates than continual real-time updates, but the periodic updates did not help the crew ascertain which units had moved since the previous update, a very important aspect of maintaining awareness of enemy and friendly status and determining enemy intent. We also compared textual and graphical methods for displaying traces of unit movements, but found no differences in SA or performance between the two methods. The research raised a number of cognitive issues associated with dynamic updating of tactical information and the display of unit histories</p>	<p>Vol. II Pg. B-231</p>
<p>Askren, W. B. & Boyett, J. E. (1990). Quantitative method for relating helicopter crew task performance and mission success. In <i>Proceedings of the IEEE 1990 National Aerospace and Electronics Conference</i> (pp. 825-830). New York, NY: IEEE.</p> <p>A quantitative method that relates aviator performance at the cockpit task level to system performance at the mission level is</p>	<p>Vol. II Pg. B-283</p>

Citation	Volume Page No.
<p>described. A series of hierarchical, probabilistic conceptual models were developed that link helicopter crew task performance to mission combat success. The models were fashioned so that predictions can be made from crew task performance, through system function performance, through flight segment performance to mission success. The models allow prediction of the relative contribution of each task, function, and segment to mission success. The models link crew task performance to four mission scores: probability of target kill, probability of surviving an enemy threat, probability of surviving ground hazards, and probability of hitting a navigation window. A proof-of-concept of the models was accomplished using subject matter expert (SME) data that were collected for AH-64 helicopter combat operations. This resulted in the production of a total of 236 equations that predict from task performance to mission success, and from mission success to task performance</p>	
<p>Van de Graaff, R. C. (1988). Considerations concerning the assessment of pilot workload for complex task conditions. In <i>Man-Machine Interface in Tactical Aircraft Design and Combat Automation</i> (AGARD-CP-425, pp. 9/1-9/15). Neuilly sur Seine, France: AGARD.</p>	<p>Vol. II Pg. B-292</p>
<p>Discusses a number of considerations concerning the problem of being able to draw conclusions from a variety (i.e. a matrix) of experimental measures in a complex task situation. Several implications are pointed out, such as the problem of dealing with contradictory outcomes, the designating of artifacts, and the problem of formulating final conclusions without the (a-priori) availability of a superior method for evaluating other methods. These considerations are examined in detail in an in-flight study concerning the assessment of pilot workload under various instrument approach conditions for a fixed-wing (civil) transport aircraft. The experimental findings have been compared with the results of a former in-flight experiment dealing with pilot workload and performance during helicopter (instrument-flying) tasks. A discussion is given of the results consisting of subjective ratings, physiological measures, and task performance measures. A strategy is discussed, dealing with the formulation of final conclusions based on the outcomes of a matrix of measures</p>	
<p>Gander, P. H., et al., (1994). <i>Crew factors in flight operations. Psychophysiological responses to helicopter operations</i>. NASA Technical Memorandum. Moffett Field, CA: NASA Ames Research Center.</p> <p>No Abstract Available</p>	<p>Vol. II Pg. B-314</p>
<p>Sirevaag, E. G., et al., (1993). Assessment of pilot performance and mental workload in rotary wing aircraft. <i>Ergonomics</i>, 36(9), 1121-1140.</p> <p>No Abstract Available</p>	<p>Vol. II Pg. B-314</p>
<p>Hamilton, B. E. (1999). Helicopter human factors. In D. J. Garland, J. A. Wise, & V. D. Hopkin (Eds) <i>Handbook of Aviation Human Factors</i>, pp. 405-428. Norwood, NJ: Lawrence Erlbaum Associates.</p> <p>Helicopters present many of the same issues to the human factors</p>	<p>Vol. II Pg. B-316</p>

engineers as do fixed-wing aircraft. This paper examines some of the unique challenges that helicopters have, issues that are related mostly to how helicopters generate and control lift, and to what is done with their unique flight capabilities. The different phases in helicopter design that have an affect on the role of human factors include: requirements definition phase; preliminary design phase; detailed design phase; assembly phase, and the flight test phase. Additional vital areas of concern are workload and operational effectiveness. The paper reviews the sources of helicopter workload and engineering solutions to the workload.

- DeLucien, A. G., Green, D. L., Jordan, S. W., & Traybar, J. J. (1979). *Workload and the certification of helicopters for IFR operation* (FAA-RD-79-64). Washington, DC: Federal Aviation Administration R&D Service. Vol. II
Pg. B-337

A review was made of the Interim Criteria. Federal Aviation Regulations, Advisory Circulars and other pertinent Documents associated with certification of Helicopters for instrument flight. A review of publications pertaining to workload definitions and evaluation, applicable to IFR helicopter operations was accomplished. The report identifies the role of aircrew workload in the IFR certification process and develops a rationale to allow determination of that portion of a pilot's attention and effort available for aircraft control. Performance objectives for required maneuvers are delineated and the interdependence of performance and workload is identified. Workload/performance implications for single and dual pilot IFR operations are reviewed. A series of flight maneuver patterns for use as IFR certification assessment tools is developed. A flying qualities workload evaluation scheme is offered for use in the FAA certification process for IFR approval of helicopters. (Author)

- Kawahara, H. Funahiki, K., Wakairo, K., Tanaka, K., & Watanabe, A. (1996). *In-flight measurement of eye scanning characteristics of helicopter pilots* (NAL/TR-1310). Tokyo, Japan: National Aerospace Lab. Vol. II
Pg. B-392

Attempts to study the control behavior of helicopter pilots have been conducted with the aim of providing fundamental information for future cockpit design, establishing procedures and training. A series of in-flight measurements of human visual scanning behavior during various flight phases were carried out: (1) hovering, (2) level light, (3) coordinated turning, and (4) approach and landing. A total of 12 pilots participated in the experiment, each of whom performed 15 repetitions.

- Muir, H. C., & Elwell, R. (1987). Assessment of workloads in helicopters. In *The Practical Assessment of Pilot Workload: Flight Mechanic Panel of AGARD* (pp. 83-89). Neuilly sur Seine, France: AGARD. Vol. II
Pg. B-593

The value of inflight assessment of pilot workload has been recognized by aviation researchers and designers for over a decade (1) (2). Initially the subjective reporting of workload by experienced test pilots was based upon an application of the Handling Qualities Rating Scale of Cooper and Harper. This subjective reporting led to the development of rating scales for the assessment of workload (4). These subjective techniques were later augmented by the recording of physiological variables which could be interpreted as indices of

workload. In the last decade, rather than restrict the assessment of workload in aviation to data obtained from test pilots, studies have been reported in which small samples of professional pilots have been used. A more recent development has been the employment of workload measures for exploring differences between pilots and to look for correlations between these measures and performance, and success in training. Workload estimation has additionally been used to assist in the ergonomic design systems including crew station geometry, and control and display location.

- Wiedemann, J. & Roscoe, S. N. (1985). *Multiple-regression model of pilot performance in vertical and translational flight* (BEL-85-2/ONR-85-2). Las Cruces, NM: New Mexico State Behavioral Engineering Lab. Vol. II
Pg. B-621

An experiment was conducted to advance the development of a multiple regression model of VTOL pilot performance as a function of various control/display system and flight mission variables. Second-order response surfaces as a function of two control system design variables (translational control order and vertical control gain reduction factor) and three downward-looking display design variables (horizontal position error magnification, translational prediction time, and translational tracking mode) were derived from Pilot performances on each of three mission scenarios. The optimum values for each of the five system design variables were determined for each scenario independently using the same central composite experimental design with three groups of four subjects each. Comprehensive analyses of variance and canonical analyses were used to refine the fitted surfaces to determine the true nature of the pilot performance effects for each flight scenario and to select a single set of system design parameters that would yield near-optimum performances on all three scenarios.

- Phatak, A. V., Karmali, M. S., & Hartzell, E. J. (1982). Development of a pilot model for helicopter visual flight task segments. In *Proceedings of the Workshop on Flight Testing to Identify Pilot Workload and Pilot Dynamics*. Mountain View, CA: Analytical Mechanics Associates, Inc. Vol. II
Pg. B-664

This paper addresses the problems associated with developing an analytical representation for the human pilot in helicopter visual flight task segments. A two-level hierarchical model structure with elements corresponding to the autonomous information processing and control tasks and higher level decision-making functions is proposed. The utility of this modeling framework for understanding or interpreting pilot response behavior is discussed with reference to the visual approach to a hover task. An information-theoretic approach for rank ordering the visual cues according to information content is developed, and applied to the austere helipad scenario.

- Phatak, A. V. (1980). *Analytical methodology for determination of helicopter IFR precision approach requirements* (NASA-CR-152367). Washington, DC: NASA Vol. II
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A systematic analytical approach to the determination of helicopter IFR precision approach requirements is formulated. The approach is based upon the hypothesis that pilot acceptance level or opinion rating of a given system is inversely related to the degree of pilot involvement in the control task. A nonlinear simulation of the helicopter approach to

landing task incorporating appropriate models for UH-1H aircraft, the environmental disturbances and the human pilot was developed as a tool for evaluating the pilot acceptance hypothesis. The simulated pilot model is generic in nature and includes analytical representation of the human information acquisition, processing, and control strategies. Simulation analyses in the flight director mode indicate that the pilot model used is reasonable. Results of the simulation are used to identify candidate pilot workload metrics and to test the well known performance-work-load relationship. A pilot acceptance analytical methodology is formulated as a basis for further investigation, development and validation.

- Smit, J. & Wewerinke, P. H. (1978). *An analysis of helicopter pilot control behavior and workload during instrument flying tasks* (NLR-MP-78003-U). Amsterdam, Netherlands: National Aerospace Lab, Flight Division. Vol. II
Pg. B-757

During helicopter instrument hover- and navigation (tracking) tasks a number of flight data, physiological measures and subjective ratings were collected. Mathematical models were used to describe and analyze the pilot's control behavior and attentional workload. The optimal control model seems to offer a suitable framework for the description of control tasks as complex as helicopter instrument flying. A control effort model, which was formulated in terms of the optimal control model, describes the relationship between performance and attention paid to the task. The physiological variables and subjective ratings in general reflected the variations in control effort connected with the various tasks.

- Callan, W. M., Houck, J. A., & Dicarlo, D. J. (1974). *Simulation study of intracity helicopter operations under instrument conditions to category I minimums* (NASA-TN-D-7786). Langley Station, VA: NASA Langley Research Center. Vol. II
Pg. B-852

A fixed-base simulator study was conducted to define pilot workload and task performance associated with instrument flight operations for an intracity helicopter passenger service. Displays considered necessary to provide a minimal capability under Instrument Flight Rules conditions were used to fly a representative commercial helicopter route structure in the New York area, with each terminal assumed to be equipped with a precision approach guidance system. A cross section of pilots participated as test subjects, and despite the high workload level, the results indicated that for the assumptions employed, minimums of 61 m (200 ft) ceiling and 805 m (0.5 mile) visibility were feasible. (Author)

- Reeder, J. P. (1967). *V/STOL terminal area instrument flight research* (NASA-TM-X-60456). Langley Station, VA: NASA Langley Research Center. Vol. II
Pg. B-902
No Abstract Available

- Charlton, M. T., Howell, S. E., Padfield, G. D., Jones, J. G., Bradley, T., MacDonald, C., Thomson, D., & Leacock, G. (1998). A methodology for the prediction of pilot workload and the influence on effectiveness in rotorcraft mission tasks. In *European Rotorcraft Forum* (pp. op05.1-op05.14). Marseilles, France: Aeronautique et Astronautique de France. Vol. II
Pg. B-984

The paper provides an overview of a new methodology for the prediction and estimation of pilot workload and the influence on effectiveness in rotorcraft mission tasks. The approach integrates contributions from

several substantial individual research activities including inverse simulation, wavelet-based control analysis, exceedance/rule-based prediction and probabilistic handling qualities metrics. The method is focused on the primary piloting function with the aim of providing a cost effective tool, using off-line simulation and analysis, for assessing the impact and effectiveness of piloting aids on rotorcraft mission performance. The method is intended for exploitation in support of the requirements capture, competitive assessment and preliminary design phases of procurement. In the paper the elements of the methodology and selected results will be presented to highlight progress and demonstrate how off-line predictions compare favorably with data from piloted experiments. Sufficient progress has been made with each of the individual aspects and their integration to assert confidently the feasibility of predicting workload ratings and metrics of practical value during early phases of procurement and design using aircraft configurational information and outline mission requirements. The future direction of the research will also be briefly discussed. (Author)

- Hughes, T. & Ingram, D. (1997). The status of human factors in civil rotorcraft safety. In *European Rotorcraft Forum* (pp. 57.1-57.13). Dresden, Germany: Deutsche Gesellschaft fuer Luft- und Raumfahrt. Vol. II
Pg. B-994

This paper examines the role of human factors in civil rotorcraft safety, notably the contribution of poor situation awareness and high workload to reduced safety. Evidence of the key issues is drawn from two studies sponsored by the UK Civil Aviation Authority (CAA). The first of these considered the factors contributing to 30 helicopter accidents in which fully functional helicopters either flew into the sea or ground or came close to doing so. Key conclusions from a second study, a survey of workload and safety hazards in offshore operations, are also introduced. This study focused on inflight paperwork but also covered many other safety issues. In addition to the potential problems faced in helicopter operations the paper examines the contribution human factors can make towards the solution of these problems. In particular the rationale behind new airworthiness regulations proposed for the certification of the human factors design process in commercial fixed-wing aircraft is discussed. The challenges of adapting these procedures to the rotorcraft environment are addressed. (Author)

- Tatro, J. S. & Roscoe, S. N. (1986). An integrated display for vertical and translational flight. Eight factors affecting pilot performance. *Human Factors*, 28, 11-120. Vol. II
Pg. B-1272

As part of an overall research program to optimize both forward-looking and downward-looking tactical situation displays for all-weather instrument flight in vertical takeoff and landing (VTOL) aircraft, an integrated horizontal situation display was developed for both vertical and translational flight. This paper covers the developed and initial experimentation of the downward-looking portion of the overall display and control system. The effects of eight factors on pilot performance were tested, and a multiple regression model of VTOL pilot performance as a function of those eight factors was derived for each of three dependent performance measures. Factors having important effects were position error magnification, control order, prediction time, control gain, tracking mode, and several of their interactions. (Author)

Citation	Volume Page No.
<p>Heffley, R. K., Bourne, S. M., & Hindson, W. S. (1984). Helicopter pilot performance for discrete-maneuver flight tasks. In <i>NASA, Ames Research Center 20th Annual Conference on Manual Control, Vol. 1</i>, pp. 223-232.</p> <p>This paper describes a current study of several basic helicopter flight maneuvers. The data base consists of in-flight measurements from instrumented helicopters using experienced pilots. The analysis technique is simple enough to apply without automatic data processing, and the results can be used to build quantitative math models of the flight task and some aspects of the pilot control strategy. In addition to describing the performance measurement technique, some results are presented which define the aggressiveness and amplitude of maneuvering for several lateral maneuvers including turns and sidesteps. (Author)</p>	<p>Vol. II Pg. B-1298</p>
<p>Roscoe, S. N., Hull, J. C., Simon, P. M., & Corl, L. (1981). <i>Human factors affecting pilot performance in vertical and transitional instrument flight</i> (BEL-81-1/ONR-81-1). Las Cruces, NM: New Mexico State Behavioral Engineering Laboratory.</p> <p>A conceptual analysis and review of human factors problems in piloting VTOL aircraft including helicopters is presented. VTOL mission and flight requirements are contrasted with those of CTOLs. Deficiencies in present VTOL flight instrumentation are detailed. The requirement that information regarding ground-referenced and airmass-referenced position in all six degrees of freedom be presented to the VTOL pilot and/or incorporated into positional control stabilization is stated. (Author (GRA))</p>	<p>Vol. II Pg. B-1343</p>
<p>Simmons, R. R. & Kimball, K. A. (1979). Operator visual workload shifts as a function of vehicle stability. In <i>Proceedings of Human Factors Society Annual Meeting</i> (pp. 352-356). Santa Monica, CA: Human Factors and Ergonomics Society.</p> <p>This research was initiated to compare the visual performance/workload of pilots during fixed wing and rotary wing flights. The corneal reflection technique was used to obtain the visual data. The results demonstrate that visual performance/workload of the pilots was different for each aircraft. Because the major difference between the aircraft was the aerodynamic stability, it was assumed that the visual workload was in fact a function of aircraft stability. The overall purpose of such research has been to provide information concerning pilots' visual requirements for safe mission accomplishment. ((Author))</p>	<p>Vol. II Pg. B-1408</p>
<p>Simmons, R. R., Lees, M. A., & Kimball, K. A. (1978). Visual performance/workload of helicopter pilots during instrument flight. In <i>AGARD Operational Helicopter Aviation Medicine</i>. Neuilly sur Seine, France: AGARD.</p> <p>Visual and psychomotor performance data was collected in an attempt to investigate and study the general visual performance of aviators during IFR conditions. Two groups of aviators, with varied experience levels, were the subjects. A NAC Eye Mark Recorder and the Helicopter In-Flight Monitoring System were utilized to collect the required data. The results indicated, among other findings, that pilot subjective opinion does not agree with objective data. Additionally, the attitude indicator and radio compass comprised over 60 percent of the pilot's total visual workload, while the aircraft's status gauges were monitored less than 10 percent of the total time. These data should provide invaluable information concerning the visual requirements of</p>	<p>Vol. II Pg. B-1422</p>

Citation	Volume Page No.
pilots for safe helicopter operations. (J.M.S.)	
<p>Lowe, W. F. (1978). Visual requirements for the helicopter pilot. In <i>AGARD Operational Helicopter Aviation Medicine</i>. Neuilly sur Seine, France: AGARD.</p> <p>Flight test results of pilots flying obstacle avoidance maneuvers are discussed. Prediction that pilots would maneuver closer to obstacles on their side of the aircraft as opposed to obstacles on the copilot/observer side and that as speed of fly-by maneuvers increased the distance required for safe clearance would increase were not completely supported by the data. Explanation of these contradictory results are offered. A survey of commercial operators to determine the unique requirements of their operations is included along with a vision plot of a new commercial twin turbine helicopter. (J.M.S.)</p>	<p>Vol. II Pg. B-1423</p>
<p>Armstrong, R. N., Hoffman, M. A., Sanders, M. G., Stone, L. W., & Bowen, C. A. (1975). <i>Perceived velocity and altitude judgments during rotary wing aircraft flight</i> (USAARL-76-3). Fort Rucker, AL: U.S. Army Aeromedical Research Lab.</p> <p>Eight Army rotary wing aviators made judgments concerning the ground speed and altitude of a UH-1 helicopter. Combinations of three ground speeds and four altitudes were used across four visual conditions including daylight and simulated night environments. In general, the results indicate: (1) absolute error in ground speed estimations increased as altitude increased; (2) at ground speeds above 50 knots there was a tendency to underestimate ground speeds, and below 50 knots ground speed estimates were dependent upon visual conditions, (3) absolute error in altitude judgment increases with aircraft altitude; and (4) at low altitudes the trend is toward underestimation and as altitude and airspeed increase the tendency is to overestimate altitude. These and other results are discussed as well as their possible implications for conduct of safe flight. (Author (GRA))</p>	<p>Vol. II Pg. B-1474</p>
<p>Winter, F. J. (1975). Effect on pilot performance with refined helicopter displays. In <i>Toward more effective testing: Proceedings of the Sixth Annual Symposium of Society of Flight Test Engineers</i> (pp. 135-157). Lancaster, CA: Society of Flight Test Engineers.</p> <p>A flight research effort has been established to evaluate recent developments of rotary wing instrument flight capability. These developments center around vehicle controllability through advanced displays and stability augmentation systems. The configuration to be first evaluated was designed from the results documented by actual pilot performance during typical rotary wing IFR maneuvers. Several subject pilots flew designed profiles to establish in what areas improvements were required. Each pilot's performance was then computerized to create the mean and standard deviation values of pilot ability to perform prescribed tasks. The analysis of the data gathered determined in what areas pilot performance could most likely be improved through refined helicopter displays. ((Author))</p>	<p>Vol. II Pg. B-1486</p>
<p>Strother, D. D. (1974). Visual and manual workload of the helicopter pilot. In <i>American Helicopter Society Annual National V/STOL Forum</i>. Washington, DC: American Helicopter Society.</p>	<p>Vol. II Pg. B-1522</p>

Citation	Volume Page No.
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Two facets of the total pilot workload are discussed. The first addresses manipulative workload during single-pilot actual instrument flight in a high-density zone. Data indicate that the helicopter pilot has ample time to perform his required manipulative tasks. The second discusses visual workload and an experimental technique for measuring this load. Data are presented which indicate an interaction of visual workload with altitude. ((Author))

Winn, A. L. & Lewis, R. B. (1974). Pilot workload during instrument flight. In *American Helicopter Society Annual National V/STOL Forum*. Washington, DC: American Helicopter Society. Vol. II
Pg. B-1522

Workload analysis including pilot effort and flight path accuracy software was developed for testing on the OH-6A helicopter. Several approaches were used to obtain pilot effort information from flight control activity. The control activity parameter which indicated the most consistent correlation with pilot opinion was the line integral of control displacement. During the tests, it was determined that a definable trade-off exists between pilot effort and flight path accuracy. It has been possible to show this quantitatively by examining the product of flight path accuracy expressed in terms of standard deviation from the mean and control activity expressed in terms of the line integral of control displacement. This procedure provided good agreement with qualitative pilot ratings for certain flight conditions (F.R.L.)

3.1.3 What should be the minimum amount of protected airspace required for the VFR helicopter flying a SNI leg/route from a human performance standpoint?

Citation	Volume Page No.
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Gerhardt-Fal, C. M., Elasyed, E. A., Livingston, D., & Colamosca, B. (2000). *Simulation of the North Atlantic air traffic and separation scenarios* (DOT/FAA/CT-TN00/04). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA375940) Vol. I
Pg. B-13

This report presents a comprehensive study of the air traffic over the North Atlantic (NAT) Ocean. The main purpose of the study is to assess the fuel savings benefit of proposed changes to the separation standards in the NAT Minimum Navigation Performance Specification (MNPS) airspace. The report describes in detail the purpose of the study, literature survey of relevant work, requirements for the air traffic simulation, various separation standard scenarios, validation of the simulation model, analysis of the results, and conclusions. Using the separation standards from the 1996 NAT system as the baseline, this study presents analysis of four different separation scenarios: Reduced Vertical Separation Minima, Reduced Vertical and Longitudinal Separation Minima, Reduced Vertical and Horizontal Separation Minima and Free Flight. A fast time simulation model is used to investigate the effect of the separation scenarios on several measures of system performance such as fuel consumption and communication loadings. This study was completed in cooperation with the NAT implementation Management Group Cost Effectiveness (NICE) Task Force. The results presented in this report represent the findings of

the NICE-USA task Group.

- Endsley, M. R., Mogford, R. H., Allendoerfer, K. R., Snyder, M. D., & Stein, E. S. (1997). *Effect of free flight conditions on controller performance, workload, and situation awareness* (DOT/FAA/CT-TN97/12). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA340228)
- Free flight represents a major change in the way that aircraft are handled in the National Airspace System. It has the potential to significantly increase airspace utilization and, by doing so, improve aircraft throughput. The degree to which these objectives can be met without compromising aircraft safety will depend on appropriate changes in the air traffic control system. This study provides an evaluation of some of the potential effects of free flight on controllers' ability to maintain an accurate and complete picture of the traffic situation. This picture or mental representation is essential for monitoring and separation functions. The study revealed that, using current technology, some aspects of free flight may adversely influence the situation awareness and performance of controllers. The results provide information on some possible consequences of free flight that should be explored in future research.
- Vol. I
Pg. B-62
- Bagot, K. (1996). *Evaluation of approach path indicator systems for heliports* (DOT/FAA/AR-95/102). Washington, DC: Federal Aviation Administration, Office of Aviation Research. (DTIC No. ADA310288)
- The objective of this report was to determine the acceptability of using existing approach path indicator technology to develop the criteria for establishing production and installation requirements for approach path indicators for heliports. The approach path indicators give the pilot a visual reference as to his proximity to a specific approach angle to the heliport in visual flight rule (VFR) landing operations. This effort required photometric testing for actual light beam characteristics, the collection of ground tracking data, and flight testing for pilot feedback as to their acceptability of the systems. Results of the evaluation showed that all three existing approach path indicator systems provided the necessary guidance to the pilot to successfully conduct VFR landing operations, and that the data collected could be used to establish criteria for their production and installation.
- Vol. I
Pg. B-110
- Teager, S. A., Biehl, K. J., Garodz, L. J., Tymczyszczym, J. J., & Burnham, D. C. (1996). *Flight test investigation of rotorcraft wake vortices in forward flight* (DOT/FAA/CT-94/117). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA318103)
- This report presents the results of helicopter flight tests and wake vortex measurements which were designed to provide data necessary for the assessment of hazards to following aircraft. The tests described in this report were conducted using small probe airplanes and a Laser Doppler Velocimeter for wake vortex measurements during forward-flight helicopter operations. Four helicopters, having weights ranging from 7,600 to 70,000 pounds, were used in the tests as the wake vortex
- Vol. I
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generating aircraft. Wake vortex strength and decay characteristics as determined from the flight test results are discussed. In the absence of encounter measurements for the case of hover flight, it is recommended that small airplanes, at the same altitude and downwind of a hovering helicopter, maintain at least 500 feet of separation.

Weiss, R. M. & Plotka, M. (1994). *Visual meteorological conditions (VMC) right turn curved approaches* (DOT/FAA/CT-TN93/24). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA280771)

Vol. I
Pg. B-182

Flight tests using left turns to final were conducted in 1989 and 1990 at the Federal Aviation Administration (FAA) Technical Center to aid in answering questions concerning curved approaches to a heliport under visual meteorological conditions (VMC). Those questions included protected airspace within the curved segment, the most feasible angle of turn, and minimum final approach segment. Additional tests using the FAA's Sikorsky S-76, were conducted at the FAA Technical Center in 1992 using right turn to final. Results will be used to help refine the airspace requirements for curved approaches. Three turn angles were examined, 45, 90 and 180 degrees each with three different final segment lengths, 800, 1200 and 1600 feet. A groundbased tracking system was used to track all maneuvers. This report documents the results of these flights. The test procedures, evaluation methodology, and technical and operational issues are discussed. Analysis of pilot performance, as well as pilot subjective input, are provided. Conclusions are drawn that address the airspace, turn angle, and final segment issues. The results will be considered in future modifications to the FAA Heliport Design Advisory Circular, AC 150/5390-2. Curved approaches, Approach surface, Final segment, Heliport.

Cheung, A. S. & Baart, D. (1994). *Civil tiltrotor market penetration effects on Northeast corridor airport delay* (DOT/FAA/CT-TN94/1). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA277534)

Vol. I
Pg. B-191

This report addresses the delay impacts resulting from replacing conventional aircraft services with civil tiltrotor (CTR) operations in the Northeast corridor at four CTR service levels. This analysis was conducted by using the National Airspace System Performance Analysis Capability (NASPAC) Simulation Modeling System (SMS). Cost of delay savings were derived by using the cost of delay module. The result of this study will be used by the Vertical Flight Program Office (ARD-30) in assessing the benefits of the CTR operations in the Northeast corridor. Civil Tiltrotor (CTR), Corridor airports, Feeder airports, Full Removal Scenario (FRS), Partial Removal Scenarios (PRS)

Smith, R. D. (1994). *Safe heliports through design and planning. A summary of FAA research and development* (DOT/FAA/RD-93/17). Washington, DC: Federal Aviation Administration, Systems Research and Development Service. (DTIC No. ADA279034)

Vol. I
Pg. B-192

During the last decade, the Federal Aviation Administration (FAA) has published several dozen research and development (R&D) reports dealing with the planning and design of landing sites for vertical flight aircraft. These landing sites include helipads at airports, heliports, helistops, vertiports, and unimproved sites. Vertical flight aircraft

include helicopters, tiltrotor, and tiltwing. These reports would make a stack that is several feet high. Airport, heliport, and vertiport planners and designers should be familiar with FAA R&D efforts in this area. We recognize, however, that many people do not have the time to read all of the published material. In addition, without a road map through all of this material, it may be difficult to see how multiple documents fit together to tell a coherent story on a particular subject of interest. With this in mind, the FAA has prepared this summary to assist you in becoming familiar with the results of these efforts. Airport, Helicopter, Heliport, Landing Site, Rotorcraft, Tiltrotor, Vertical flight.

Weiss, R. M. (1993). *VMC left turn curved approaches, test results* (DOT/FAA/CT-TN92/46). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA269476)

Vol. I
Pg. B-217

Flight tests were conducted at the Federal Aviation Administration (FAA) technical Center in 1989 and 1990 to aid in answering questions concerning curved approaches to a heliport under visual meteorological conditions (VMC). These questions include protected airspace within the curved segment of the approach, the most feasible angle of turn and minimum final approach segment. The FAA's Sikorsky S-76 and UH-1H were used for these tests. Data were collected from approaches using turn angles of 45-, 90-, and 180-degrees, each with three different final segments, 800, 1200, and 1600 feet (ft). Due to airspace restrictions at the time of these tests, left turns to final were flown. All maneuvers were tracked by ground-based tracking systems. This report documents the results of these flights. The test procedures, evaluation methodology, and technical and operational issues are described. Analysis of pilot performance as well as pilot subjective input are provided. Conclusions are presented that address the airspace, turn angle, and final segment issues. The results will be considered in future modifications of the FAA Heliport Design Advisory Circular, AC 150/5390-2. All appendixes can be found in Research Directorate for Aviation Technology Division Report DOT/FAA/CT-ACD33093/6, Appendixes for TN92/46 VMC Left Turn Curved Approaches, Test Results. Curved approaches, Approach surface, Final approach segment, Heliport, VMC.

Weiss, R. M. (1992). *Helicopter nighttime parking test results – UH1H* (DOT/FAA/CT-TN92/1). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA253798)

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Pg. B-270

Flight tests had previously been conducted at the Federal Aviation Administration (FAA) Technical Center to examine issues regarding rotortip separation in ground maneuver areas at heliports. Technical Note DOT/FAA/CT-TN88/30, Heliport Surface Maneuvering Test Results, details the results of those tests. However, those tests were conducted under visual flight conditions (VFR) daylight conditions. Given the limitations of scopic vision, it was determined that nighttime testing was needed to determine whether pilot parking separation performance and perception deteriorates under night, low ambient light conditions. This report documents the results of nighttime parking tests conducted at the Technical Center between January 1989 to August 1989. Over 100 parking maneuvers were conducted using a UH-1H helicopter. All were

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conducted under head, tail, and crosswind conditions, with an unlit and a lit obstacle and without an obstacle in place. Pilot subjective data in reference to these maneuvers were collected via post-maneuver ratings and post-flight questionnaire. Helicopter Parking, Rotor Tip Clearances, UH-1H Helicopter.

<p>Hogan, S. N. (1990). <i>Test plan for helicopter visual segment instrument approach lighting system (HILS)</i> (DOT/FAA/CT-TN90/61). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADB225673)</p>	<p>Vol. I Pg. B-283</p>
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No Abstract Available

<p>Weiss, R. M. (1990). <i>Analysis of heliport environmental data; intercoastal city</i> (DOT/FAA/CT-TN89/43). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA228547)</p>	<p>Vol. I Pg. B-310</p>
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During a 2-day period in May 1988, heliport environmental data were collected at Petroleum Helicopter Incorporated's Heliport in Intracoastal City, LA. The purpose of this data collection activity was to gather measurements of rotorwash at a heavy use heliport frequented by larger helicopters with higher gross weights than observed during previous data collection activities. The previous data collection activities are documented in Technical Note DOT/FAA/CT-TN87/54, I, titled, Analysis of Heliport Environmental Data: Indianapolis Downtown Heliport, Wall Street Heliport, Volume I, Summary. During this operation, ten wind vector transmitters were situated at various locations around the facility in order to gather information to describe the rotorwash induced wind speed and wind direction changes. This report documents the results of this data collection activity. the data collection and analysis methodology are explained. Graphical presentations of the heliport environment and of rotorwash induced wind speeds and wind speed and direction changes are included. The Concepts Analysis Division Report, ACD-330-89-10, Analysis of Heliport Environmental Data, Intracoastal City, LA, contains the heliport wind speed and direction plots for each flight. Keywords: Rotorwash, Rotorcraft, Rotor tip clearance. (kr)

<p>Samph, S., Weiss, R. M., & Wolf, C. J. (1990). <i>Heliport visual approach surface high temperature and high altitude tests</i> (DOT/FAA/CT-TN89/34). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA226542)</p>	<p>Vol. I Pg. B-314</p>
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During the summer of 1988 flight tests were conducted at Kirkland AFB, Albuquerque, New Mexico, at an auxiliary landing field. The purpose of these flights was to examine the current heliport approach/departure surface criteria under hot climate and/or high altitude conditions as defined in the Heliport Design Advisory Circular and to verify or modify these surfaces, if appropriate. Data were collected using a Bell UH-1 helicopter for 7.125, 8.0, and 10.0 straight-in approach surfaces. Also, straight-in departure surfaces of 7.125, 10.0, and 12.0 were used. In addition to these procedures, the pilots were able to choose any angle of approach and departure. All maneuvers were tracked using an onboard Global Positioning System (GPS) system. This report documents the results of this activity. It describes the flight test and evaluation method and addresses technical as well as operational issues. It provides statistical and graphical analysis of pilot performance along with a discussion of pilot subjective opinions

concerning the acceptability and perceived workload, safety, and control margins associated with the procedures flown. Keywords: Heliports; Surface properties; Flight profiles; High temperature; Approach/takeoff; Visual flight rules. (RWJ)

- Wolf, C. J. (1990). *Analysis of distribution of visual meteorological conditions (VMC) heliport data* (DOT/FAA/CT-TN89/67). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA221591)

Vol. I
Pg. B-316

The FAA Technical Center's Visual Meteorological Conditions (VMC) project was designed to provide data for the validation of the Heliport Design Advisory Circular (AC 150/5390-2) visual approach/departure surface criteria. Procedures for the analysis of data collected during this project were specified by the Design and Operations Criteria Division, AAS-100. These procedures are based on an assumption of the Gaussian, or Normal, distribution. During the data reduction and analysis phase of the VMC project, questions were raised as to validity of the assumption of the Normal distribution for the characterization of VMC data. This report documents an effort undertaken to look at the VMC data for the purpose of drawing conclusions about the proper distributional assumption. Several different procedures were used to test the original assumption. This report provides information on the tests used in this effort and on several alternate distributions, i.e., the Beta and Gamma distributions. (jhd)

- Billmann, F. R. & Shollenberger, S. (1989). *Helicopter visual segment approach lighting system (HALS) test report* (DOT/FAA/CT-TN89/21). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA326987)

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This Technical Note reports on a test designed to obtain pilot performance subjective pilot data on the Helicopter Visual Segment Approach Lighting System (HALS). Results identify the performance measures which correlate with the pilot's ability to visually acquire a HALS equipped heliport. Conclusions state that HALS can support existing minima to heliports. Pilots reported unacceptable Cooper-Harper ratings for rate of closure and workload without HALS. (sdw)

- Plotka, M. S. & Weiss, R. M. (1989). *Heliport night parking area criteria test plan* (DOT/FAA/CT-TN88/45). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA208401)

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This flight test plan describes the method to examine the issue of heliport night parking surface separation criteria. Operational measures will be collected at the FAA Technical Center, Atlantic City International Airport, New Jersey, using an instrumented UH-1H helicopter. Flight maneuvers will be conducted at the Technical Center to identify night parking area separation criteria under various wind conditions. Wind velocity and direction data will be collected during night parking operations to determine effects at different locations around the parking area. This data will be used to create a baseline for characterizing heliport night parking area separation criteria. The test development, test equipment, data collection, data reduction, and analysis of flight data are discussed. A schedule for the completion of the associated tasks is presented. Keywords: VMC (Visual Meteorological Conditions), Night parking surfaces, Surface maneuvers, Separation

Citation	Volume Page No.
<p>criteria, Heliports, Helicopters. (EDC)</p>	
<p>Weiss, R. M., Wolf, C. J., Erlichman, S. L., & Morrow, J. G. (1989). <i>Helicopter surface maneuvering test results</i> (DOT/FAA/CT-TN88/30). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA214116)</p> <p>During late fall 1987 and early spring 1988 flight tests were conducted at the Federal Aviation Administration (FAA) Technical Center's National Concepts Development and Demonstration Heliport. The purpose of these tests was to measure pilot perception of helicopter tip clearances for parking and taxiing maneuvers and to measure pilot performance during these maneuvers. Over 100 parking and taxiing maneuvers were conducted using a UH-1H helicopter. The parking procedures were conducted under head, tail, and crosswind conditions, both with and without an obstacle in place. the taxiing procedures were carried out with a centerline, with only side markings, and with no ground markings. A ground-based laser tracker system was used to tract the taxiing procedures. Pilot subjective data in reference to these maneuvers were collected via a post-flight questionnaire. Pilot interviews were conducted at heliports across the country. These interviews gathered pilot views concerning rotor tip clearances for parking and hover taxiing maneuvers, ground markings for parking operations, and hover taxiing heights. This report documents the results of this activity. It describes the data collection and analysis methodology and addresses objective as well as subjective issues. It provides statistical and graphical analysis of pilot performance and perception data and pilot subjective data. Keywords: Terminal flight facilities; Heliports; Heliport parking; Heliport taxiing; Rotor tip clearances.</p>	<p>Vol. I Pg. B-347</p>
<p>Smith, R. D. (1988). <i>Minimum required airspace under visual flight rules</i> (DOT/FAA/DS-88/12, DOT/FAA/AS-89/1). Washington, DC: Federal Aviation Administration, Advance System Design Service. (DTIC No. ADA201433)</p> <p>Recently, the FAA started a flight measurement project to examine the issue of minimum required VFR airspace. Test data were collected objectively in a manner similar to what is done to define the minimum airspace for a precision approach. Heliport approach and departure flight profiles were recorded using a variety of subject pilots flying several different helicopters. Data were analyzed statistically to determine the mean, standard deviation, and 6 sigma isoprobability curves. Results of this effort are documented in FAA/CT-TN87/40, Heliport Visual Approach and Departure Airspace Tests. An analysis of the statistical distribution of these data is contained in FAA/CT-TN88/44, Analysis of Distributions of VFR Heliport Data. These test reports are not likely to be the last word on this topic but they should serve to focus the discussion on specific issues in a way that is constructive. This report is intended to focus discussion on how the data should be interpreted, some of the historical issues involved, and the direction to be taken in future work. (JES)</p>	<p>Vol. I Pg. B-354</p>
<p>Weiss, R. M., Wolf, C. J., Harris, M., & Triantos, J. (1988). <i>Helicopter visual approach and departure airspace tests. Volume 1. Summary</i> (DOT/FAA/CT-TN87/40-1). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA200028)</p>	<p>Vol. I Pg. B-359</p>

During the winter and spring of 1987 flight tests were conducted at the Federal Aviation Administration (FAA) Technical Center's Concepts Development and Demonstration Heliport at the Atlantic City International Airport, N.J. The purpose of these flights was to examine and validate the current heliport approach/departure surfaces criteria as defined in the heliport Design Guide and to recommend modifications to these surfaces, if appropriate. The flight activities were conducted using aircraft representative of those in the civilian world. Data were collected using approach surfaces of 7.125, 8.00, and 10.00 deg for straight as well as curved path procedures. Also, departure surfaces of 7.125, 10.00, and 12.00 deg for straight and curved path procedures were used. All maneuvers were tracked by ground based tracking systems. This report documents the results of this activity. It describes the flight test and evaluation methodology and addresses technical as well as operational issues. It provides statistical and graphical analysis of pilot performance along with a discussion of pilot subjective opinions concerning the acceptability and perceived workload, safety, and control margins associated with the procedures flown. The results of this work will be considered in the future modifications of the FAA Heliport Design Advisory Circular, AC 150/5390-2. (FR)

- Plotka, M. S. & Weiss, R. M. (1988). *Heliport visual approach surface high temperature and high altitude test plan* (DOT/FAA/CT-TN88/5). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA200027) Vol. I
Pg. B-363

The purpose of this test plan on Helicopter Visual Meteorological Conditions (VMC) Clearance project to be conducted at high temperature and high altitude conditions are as follows: (a) The identification of problems to be investigated; (b) The definition of the tasks required to resolve these problems; (c) The development of test procedures; (d) The description of the methodology for data collection, reduction, and analysis; (e) The specification of the required data. The focus of this test is on the issue of airspace requirement and obstruction protection requirements for visual approaches and departures at a heliport. (FR)

- Magrogan, M. (1987). *Loran C VNAV (Vertical Navigation) approaches to the technical center heliport* (DOT/FAA/CT-TN86/56). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA182152) Vol. I
Pg. B-382

This report documents the results of Loran C vertical navigation (VNAV) approaches to the Federal Aviation Administration (FAA) Technical Center Heliport. Results of this study show that the three dimensional (3D) Loran C Navigator met the requirements of Advisory Circular (AC) 90-45A for two dimensional (2D) error components of total system crosstrack (TSCT) and flight technical error (FTE). In addition, the 3D error component of vertical flight technical error (VFTE) met the requirements of AC 90-45A. 23

- Billmann, B. R., Webb, M. M., Morrow, J. G., Gallagher, D. W., & Wolf, C. J. (1987). *Heliport critical area flight test results* (DOT/FAA/CT-TN86/64). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADA183153) Vol. I
Pg. B-384

The development of the microwave landing system (MLS) has resulted in the need for several different flight tests to optimize the utility of MLS. One such series of tests were designed to define criteria for

siting MLS antennas at heliports. Due to the unique maneuver capabilities and the limited real estate available at heliports, flight tests were also conducted to determine the airspace and real estate surrounding the MLS antennas which must be protected when the MLS is sited at heliports. The need for this protected region is to guarantee signal coverage and quality. Based on the test flight results conducted at the Federal Aviation Administration (FAA) Technical Center, a minimum region (surrounding the MLS antennas and signal monitor poles) which must be protected is identified. Keywords: Helicopter, Instrument Approaches.

<p>Wolf, C. J. (1985). <i>Helicopter terminal instrument approach procedures (VOR/ILS)</i> (DOT/FAA/CT-TN85/24). Atlantic City, NJ: Federal Aviation Administration Technical Center. (DTIC No. ADB169888)</p> <p>No Abstract Available</p>	<p>Vol. I Pg. B-413</p>
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<p>Vickers, T. K. & Freund, D. J. (1981). <i>Helicopter area air traffic control demonstration plan</i> (FAA-RD-81-59). Washington, DC: Federal Aviation Administration Systems Research and Development Service. (DTIC No. ADA174973)</p>	<p>Vol. I Pg. B-543</p>
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As part of the Helicopter Operations Development Plan, this document outlines a phased study of area navigation applications in the control of low-altitude IFR helicopter operations, with particular emphasis on methods of reducing controller workload in order to make the use of direct random routes feasible. Each of the four phases of the plan embodies analysis, simulation, and validation. The study is evolutionary; Phase 1 starts with the basic functions of generating conflict-free routes, and maintaining positive separation between aircraft in areas outside of radar coverage. Phase 2 introduces terrain problems in mountainous areas. Phase 3 investigates interactions between fixed and random routes, and between fixed-wing aircraft and helicopters in major terminal areas. Phase 4 (pertaining to navigation, communications, and surveillance coverage) in which the airborne separation assurance function will be investigated). A broad outline of the entire plan is presented, with a detailed schedule of the first phase. Keywords: Air traffic control, RNAV).

<p>Federal Aviation Administration. (1979). <i>Helicopter air traffic control operations</i> (FAA/RD-78-150). Washington, DC: Author, Systems Research and Development Services. (DTIC No. ADA072793)</p>	<p>Vol. I Pg. B-619</p>
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The problems which inhibit the integration of IFR operations in the ATC system were examined, and recommendations were made to resolve these problems. Revisions in TERPS criteria and in the ATC Handbook are necessary to minimize interference between fixed-wing and rotary-wing aircraft. The use of 2 nm radar separation between IFR helicopters in terminal areas is recommended to increase capacity by reducing the time interval between helicopter approaches to a value consistent with the time interval between fixed-wing approaches. Helicopters have a special need for low-altitude RNAV capability and the ATC system needs to be better adapted to handle the random route traffic that helicopters will generate in exploiting their special capabilities. To this end, it is recommended that the FAA develop software to call up and display, on the ATC PPI, random waypoints and connecting routes, on an as-needed basis. Helicopters operating offshore and in remote areas are often

Citation	Volume Page No.
<p>beyond the coverage of surveillance radar, thus requiring the use of procedural control. They also operate below the coverage of VHF communications and VOR/DME, requiring alternate types of systems, several of which are recommended. The need for special controller training in procedural control, and in helicopter characteristics and limitations was made apparent during the study. (Author)</p>	
<p>Hunting, A. W. & Fleming, R. S. (1968). <i>Evaluation of helicopter steep slope GCA operations</i>. Washington, DC: Federal Aviation Administration Flight Standards Service. (DTIC No. AD0676528)</p> <p>The purpose of the study was to evaluate steep approaches flown in helicopters used for training and tactical operations, and to record data for use in the development of precision approach procedures for rotary wing aircraft. These data can also be applied to civil procedures standards and common system approach facilities. In this evaluation the following factors were considered: (a) Flyability of glide slope angles chosen; (b) Airspeed/vertical velocity envelopes; (c) Lengths of instrument approach segments; (d) Location of ground point of intercept (GPI); (e) Deceleration distances; (f) Decision height; (g) Required obstruction clearance (ROC); (h) Lead fix requirements; (i) Exposure time from decision height (DH) to touchdown; (j) Deceleration during the descent; (k) GCA procedure techniques; (l) GCA antenna alignment changes in azimuth and elevation; (m) Comparison between stabilized and unstabilized helicopters. The maximum usable effective angle was found to be 12 degrees. The flight parameters, approach procedure, and obstacle clearance requirements appropriate to steep approach angles were derived for application to Army training and tactical use. Conclusions and recommendations of particular relevance to civil procedures are noted. (Author)</p>	<p>Vol. I Pg. B-819</p>
<p>Hunting, A. W. & Parr, F. (1968). <i>Helicopter enroute IFR</i> (FAA-65-920-6). Washington, DC: Federal Aviation Administration Flight Standards Service. (DTIC No. AD0689776)</p> <p>An evaluation of pilots flying selected VOR routes was conducted under simulated IFR operation to assess the vertical and lateral flight technical error. Radar flight track tracings and movie film were used to collect data. A statistical analysis of the data shows that stabilized helicopters may be safely operated IFR within 25 1/2 miles of a VOR station when at least 500 feet of obstruction clearance is provided in the area two nautical miles on each side of the radial providing course guidance with reduced obstruction clearance beyond 2 NM to a maximum lateral distance of 3 NM. (Author)</p>	<p>Vol. I Pg. B-821</p>
<p>Geisinger, K. E. (1985). Airspace conflict equations. <i>Transport Science</i>, 19(2), pp. 139-153.</p> <p>No Abstract Available</p>	<p>Vol. II Pg. B-55</p>
<p>Tobias, L., Erzberger, H., Lee, H. Q., & O'Brien, P. J. (1985). Mixing 4-dimensional equipped and unequipped aircraft in the terminal area. <i>Journal of Guidance Control and Dynamics</i>, 8(3), pp. 296-303.</p> <p>No Abstract Available</p>	<p>Vol. II Pg. B-55</p>
<p>Horn, J. F., Calise, A. J., & Prasad, J. V. R. (2001). Flight envelope cueing on a tilt-rotor</p>	<p>Vol. II</p>

Citation	Volume Page No.
<p>aircraft using neural network limit prediction. <i>Journal of the American Helicopter Society</i>, 46 (1), pp. 23-31.</p> <p>A method for using neural networks to provide predictive flight envelope limit information was developed. The method was applied to provide a tactile cueing system for normal load factor and angle-of-attack buffet limits on the V-22 tilt-rotor aircraft. Results from a real-time piloted simulation showed that the system enabled the pilot to maneuver along the flight envelope boundaries without exceeding the limits. Results indicated that the approach has the potential to expand the effective safe maneuvering flight envelope of aircraft with structural load limits. Tilt rotor aircrafts Flight envelope cueing</p>	Pg. B-108
<p>Paccini, P. (1989). Air traffic control's application to vertical flight – an international perspective. <i>Vertiflite</i>, 35, 6, 18-20.</p> <p>With the current air traffic regulations, even a helicopter wishing to make an instrument approach can only use the existing facilities and must strictly follow the procedures prescribed for fixed wing aircraft. Recently, however-and undoubtedly the development of tiltrotor programs has contributed to this-research and experimental work in the United States have identified the heir to the successful ILS as being the MLS (Microwave Landing System). This highly versatile and accurate system allows the automatic simultaneous control of many aircraft from various directions, even with curved paths, varying altitudes, and, most interesting of all, with approach angles as large as 20°DGR@C. This is why ICAO, together with the FAA, has already set up a program for the gradual replacement of ILS with MLS. At the beginning the two systems shall be used simultaneously. By 1998, the new system will take over on a global scale. Vertical Flight Aircraft Instrumented Landing Approaches Vertiport Airspace Control Microwave Landing System</p>	Vol. II Pg. B-202
<p>Barrer, J. N. & Sinha, A. N. (1988). Operational perspective of potential benefits of microwave landing systems. <i>Journal of the Institution of Engineers (India), Part AE: Aerospace Engineering Division</i>, 69, 1-2, 16-21.</p> <p>MLS has wide of applications. It has the potential to offer benefits to all classes of users (air carrier, general aviation, commuter, rotorcraft etc), at all types of airports (large, small, reliever, heliports, etc). Each individual application requires a set of ATC procedures and corresponding ground system/avionics capability to be effective. These requirements are included in the paper together with the general requirements that may require modification or adaptation for site-specific application. The purpose of the explicit identification of these requirements is to provide some insight to the transition planning from the current ILS to the future MLS environment., Microwave Landing Systems Instrument Landing Systems Ground Systems</p>	Vol. II Pg. B-202
<p>Demko, P. S. (1980). Helicopter decelerated steep approach and landing to confined areas under instrument meteorological conditions. In <i>IEEE Plans 80. Position Location and Navigation Symposium</i> (pp. 381-388). New York, NY: IEEE.</p> <p>In practice, lack of adequate guidance and flight instrumentation systems usually limit the helicopter to performing confined area operations only to periods when the pilot can clearly see his point of intended landing from slant ranges in excess of 1/2 mile. Darkness, weather and other visibility reducing phenomena usually force curtailment of confined area operations. This limitation no longer needs to be tolerated. Small, portable</p>	Vol. II Pg. B-306

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<p>microwave landing guidance systems, used in conjunction with 4-cue decelerated steep approach and landing (DSAL) flight director systems, tailored specifically to unique helicopter requirements, can now overcome the visibility barriers and provide a true all-visibility DSAL capability</p>	
<p>Hoh, R. H. (1991). <i>Decision-height windows for decelerating approaches in helicopters: Pilot vehicle factors and limitations</i> (DOT/FAA/CT-90/14). Atlantic City, NJ: Federal Aviation Administration Technical Center. No Abstract Available</p>	<p>Vol. II Pg. B-323</p>
<p>Sawyer, B. M. & Peisen, D. J. (1994). <i>VFR helicopter obstacle-rich environments: Test and evaluation letter report</i> (FAA-RD-94/41). Washington, DC: Federal Aviation Administration R&D Service.</p>	<p>Vol. II Pg. B-355</p>
<p>This is the first in a series of two letter reports detailing the specific test and evaluation requirements, scenarios, data processing techniques, and government/industry comments concerning pilot performance in an obstacle rich environment. The second report will develop and recommend the requirements for a piloted helicopter visual simulator to support data collection in this effort. This report details the issues and the development of test and evaluation criteria necessary to evaluate the psychological effects of an increasingly obstacle rich VFR heliport environment on the ability of a pilot to operate. In addition, it addresses a conceptual application of target level of safety, to assist the FAA and individuals concerned with heliport planning with regard to the proximity of obstacles to a VFR heliport. The effect of an increasingly obstacle rich helicopter environment on pilot performance will be tested by collecting definitive performance data through the use of a piloted, visual helicopter simulator. Results will be verified with actual flight testing. This study is divided into two phases. Phase 1 is further divided into four tasks: (1) test and evaluation requirements, (2) simulation requirements and facilities, (3) simulation test plan, and (4) pilot briefing materials. The product of task 3 is the completed test plan. The product of task 4 is pilot briefing material that explains their role in the test and participation requirements.</p>	
<p>Society of Automotive Engineers (1995). <i>Integration of vertical flight aircraft into the national airspace system</i> (SAE Standard). Warrendale, PA: Author.</p> <p>The scope of this document, although limited to human factors issues, is actually quite broad. controls, aircraft stability, power margins, and pilot training, to name a few, all bring their own human factors issues to the overall objective of integrating vertical flight aircraft into the NAS. This document is a compilation of human factors issues relating to vertical flight systems. report of the human factors 'health' of vertical flight as well as provide an historical perspective of the issues that have been considered. affect the issues.</p>	<p>Vol. II Pg. B-371</p>
<p>Callan, W. M., Houck, J. A., & Dicarlo, D. J. (1974). <i>Simulation study of intracity helicopter operations under instrument conditions to category 1 minimums</i> (NASA-TN-D-7786). Langley Station, VA: NASA Langley Research Center.</p> <p>A fixed-base simulator study was conducted to define pilot workload and task performance associated with instrument flight operations for an</p>	<p>Vol. II Pg. B-852</p>

Citation	Volume Page No.
<p>intracity helicopter passenger service. Displays considered necessary to provide a minimal capability under Instrument Flight Rules conditions were used to fly a representative commercial helicopter route structure in the New York area, with each terminal assumed to be equipped with a precision approach guidance system. A cross section of pilots participated as test subjects, and despite the high workload level, the results indicated that for the assumptions employed, minimums of 61 m (200 ft) ceiling and 805 m (0.5 mile) visibility were feasible. (Author)</p>	
<p>Bauer, R. W. & Barnes, J. A. (1967). <i>Human factors in anticollision lighting for VTOL and V/STOL aircraft</i> (HEL-LETTER-64). Aberdeen Proving Ground, MD: Human Engineering Lab.</p> <p>The VTOL and V/STOL flight regimes are sufficiently different from those of fixed wing aircraft to magnify certain aspects of the collision avoidance problem. For example, high rates of climb and the capability for lateral translation may require increased visibility vertically and laterally. In addition, the contrasts and intensities required for light visibility against high luminance day-lighted surfaces are very different from those required for night flight conditions. These considerations have initiated a review and re-examination of anticollision lighting requirements. (Author)</p>	<p>Vol. II Pg. B-878</p>
<p>Green, D. L. & Kimberlin, R. D. (1995). Helicopter unique instrument approaches – Trajectories, flying qualities, controls and displays. In <i>SAE 1994 Transactions, Journal of Aerospace, Vol. 103</i>, 2189-2200. Warrendale, PA: Society of Automotive Engineers.</p> <p>The paper presents an argument for combining the precision of GPS with robust slow speed agility of the helicopter to support the wide implementation of a helicopter precision track GPS (HPT-GPS) instrument approach. The autonomous nature of the approach suggests that it is particularly suited for use at small airports and heliports. This capability is then characterized as providing an affordable way to facilitate the integration of rotorcraft into the National Airspace System to facilitate commerce and emergency medical service to areas that are otherwise poorly served by aviation during inclement weather. The paper defines a new minimum approach airspeed (V(MAP)) which applies to the last segment of the approach. This segment involves a descent to a minimum descent altitude and continued flight to a Helicopter Visual Descent Point which is expected to be located 150 ft or more above or beyond the runway threshold. A series of charts is used to explain the relationship between V(MAP) and the current minimum airspeed for instrument flight. The paper concludes with a justification for displaying both ground speed and airspeed and suggests formats for both. (Author)</p>	<p>Vol. II Pg. B-1036</p>
<p>Klein, P. D., Wilkinson, P. R., & Zmroczek, L. A. (1993). Civil tiltrotor – Flight simulation development of instrument procedures. In <i>AHS, Annual Forum Proceedings, Vol. 1</i>, pp. 465-479. Alexandria, VA: American Helicopter Society.</p> <p>Real-time, piloted simulation researches have been conducted which demonstrate the ability of tiltrotor aircraft to execute steep</p>	<p>Vol. II Pg. B-1090</p>

instrument approaches to vertical landings. Approaches with glide slopes as steep as 25 deg have been successfully demonstrated. Guidance cues provided for the pilots included raw flightpath deviation data and flight director steering commands. The low speeds associated with the steepest approaches introduce unique problems that favor the use of flight director guidance or modified pilot control strategies. Steep approaches are expected to be a normal requirement for center-city vertiport operations, but existing instrument procedures and ATC procedures do not support the steep approach capabilities of vertical flight aircraft. The FAA has recognized this and directed the development of the Vertical Flight IFR Terminal Area Procedures (VERTAPS) program plan. VERTAPS will develop instrument procedures and ATC procedures to take advantage of the unique capabilities of vertical flight aircraft while safely and efficiently integrating them into the national airspace system. (Author (revised))

- Green, D. L., Andrews, H., & Saraniero, M. (1989). *An early overview of tiltrotor aircraft characteristics and pilot procedures in civil transport applications* (DOT/FAA/DS-89/37). Washington, DC: Federal Aviation Administration. Vol. II
Pg. B-1168

A brief description is provided of tiltrotor aircraft, and some of their projected operating characteristics are identified. Two operations are of particular interest: steep approaches into a confined metropolitan vertiport; and approaches into a vertiport without sufficient clear airspace for a conventional missed approach from a low decision height. Both operations are of interest in order to minimize the airspace needed to conduct such operations. A brief simulation was conducted to support the analysis using a fixed base simulator. The flight simulation involved a quick look at innovative and tiltrotor unique maneuvers to identify and evaluate operations at or near the operational limits. The tiltrotor shows promise of permitting much steeper approach and departure maneuvers than what can be done with either an airplane or a helicopter. (Author)

- Tobias, L., Lee, H. Q., Peach, L. L., Willett, R. M., & O'Brien, P. J. (1983). Helicopter IFR approaches into major terminals using RNAV, MLS, and CDTI. In *American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, Vol. 20*, pp. 666-673. Vol. II
Pg. B-1359

Previously cited in issue 06, p. 806, Accession no. A82-17868

- Gallagher, J. & Till, R. D. (1981). Instrumentation to determine the suitability of ARNAV systems for helicopter navigation in the national airspace system (NAS). In *AIAA, SETP, SFTE, SAE, ITEA, and IEEE, Flight Testing Conference* (AIAA Paper 81-2514). Vol. II
Pg. B-1376

This paper describes instrumentation developed and flight testing conducted by the Federal Aviation Administration (FAA), Technical Center, to determine the suitability of RNAV systems for helicopter navigation. A data collection package consisting of a militarized minicomputer interfaced to aircraft sensors and RNAV systems typically representative of LORAN-C, GPS, Inertial Navigation, and Omega was designed and fabricated. A portable low cost position tracking system was devised for non-precision approach navigation tests by Kalman filtering post flight position data derived from a pulsed radar ranging

system with inertial and air data measurements, resulting in improved position accuracy. ((Author))

3.2 RESEARCH FACILITY MATRIX

To supplement the literature search results, HSIAC has prepared a list of international research facilities (Government, Academic, and Commercial) having subject matter expertise in the area of human factors associated with helicopter aircrew performance. The list includes, where possible, points of contact with current phone, email, and addresses as well as a brief capabilities overview or research highlight.

Lab/Organization	Research/Facility Description	PoC Information
ILLIANA Aviation Sciences Limited	<p>ILLIANA Aviation Sciences Limited is an Illinois corporation with offices in Las Cruces, New Mexico, and McKinleyville, California. The company is engaged in research and development in the areas of visual performance, flight display and control design principles, and the WOMBAT family of computer-based tests of situational awareness and stress tolerance for the selection of complex system operators including pilots and controllers of air, surface, and subway traffic. Recent projects include technical support for a multifactor research program sponsored by the United States Air Force to measure the effects of numerous equipment and viewing-condition variables on eye accommodation and judgments of the apparent sizes of distant objects. Another has been the development of the WOMBAT-FC test for the selection of Flow Controllers with a heavy emphasis on "keeping the picture" in complex traffic situations.</p>	<p>Dr. Stanley N Roscoe ILLIANA Aviation Sciences 2750 Sunny Grove Ave. McKinleyville, CA 95519-7912 (707) 839-1271 roscoe@aero.ca</p>
The University of Tennessee Space Institute	<p>Principal research interests are in the areas of applied aerospace and flight simulation. These range from flight testing to product design. Specific approaches include: virtual prototyping for flight research in an attempt to reduce risk and developmental costs, integration of new concept displays into the cockpit, development of rotorcraft infrastructure including communication, navigation, pilotage using advanced concepts, flying qualities assessment techniques, aviation human factors, development of flying test techniques, aerospace parameter identification techniques, air vehicle modeling for simulation applications, using simulators as a concurrent engineering tool, verification and validation techniques for flight and training simulators, investigation of reduced fidelity simulators for specific tasks, determination of required simulation fidelity, man-in-the-loop simulations, in-flight simulation studies and restructuring the engineering process to capitalize on synthetic environments.</p>	<p>Dr. William D. Lewis Associate Professor, Aviation Systems and Flight Research (931) 393-7418 wlewis@utsi.edu MS-20 The University of Tennessee Space Institute B. H. Goethert Parkway Tullahoma, TN 37388-9700</p> <p>Fred Steller Research Assistant Professor UT Space Institute (931) 393-7496 fstellar@utsi.edu MS-20 The University of Tennessee Space Institute B. H. Goethert Parkway Tullahoma, TN 37388-9700</p>

Lab/Organization	Research/Facility Description	PoC Information
		<p>Ralph Kimberlin, Ph.D. Program chairman, Aviation Systems 615-393-7411 or 615-455-5912, 931-393-7411 or 408 MS-39 The University of Tennessee Space Institute B. H. Goethert Parkway Tullahoma, TN 37388-9700</p>
LaRC—NASA	<p>Rotorcraft Hover Test Facility: Special/Unique Capabilities: Cell designed for isolated rotor tests with elevated platform outside of ground effect, Cell tailored for use with tiltrotor systems including an elastic wing cantilever mount. Equipment/Instrumentation: Fully integrated flexible data acquisition system capable of sampling 64 channels at over 1000 Hz, Closed-circuit water system with chiller to cool electric drive motors, Integrated hydraulic system capable of 3000 PSI and high flow rates, High-intensity strobe lights for rotor blade tracking, Color camera system with pan, tilt, and zoom for rotor system observation, Black and white camera system with pan & tilt designed to aid in rotor track and balance operations. http://aeroelasticity.larc.nasa.gov/RHTFSinglePageJan99.htm (Retrieved on July 12, 2001)</p>	<p>Pete McHugh (757) 864-8490 p.c.mchugh@larc.nasa.gov Dr. Thomas Noll Aeroelasticity Branch, Building 648 (757) 864-2820. t.e.noll@larc.nasa.gov</p>
Monterey Technologies Inc. (MTI)	<p>Title: Improved Visual Landing Aids on Air Capable Ships Summary: This a Navy sponsored program to look at the feasibility of utilizing state-of-the-art Visual Landing Aid (VLA) technologies on smaller aviation capable ships. Advanced technology would be evaluated based on its adaptability to older ships, as well as newer versions (e.g. LPD-17), and its capability in enhancing aircrew performance during shipboard landing evolution. Enterprise in rotorcraft and commercial aviation human factors as well as ATC operations http://www.montereytechnologies.com/proj.htm (Retrieved on July 12, 2001)</p>	<p>Becky Hooey, Principal investigator for NASA Ames' T-NASA system NASA Ames Research Center (MS 262-4) Human-Automation Integration Research Branch Human Factors Research and Technology Division Moffett Field, CA 94035-1000 Phone: (650) 604-2399 Fax: (650) 604-3729 bhooey@mail.arc.nasa.gov http://www.montereytechnologies.com/ (Retrieved on July 12, 2001)</p>

Lab/Organization	Research/Facility Description	PoC Information
Damos Research Associates Inc.	<p>Damos Research Associates, Inc., offers services in three areas: pilot selection, evaluation, and training devices. In addition, we offer short courses in pilot selection, cockpit resource management, and team building. Damos Research Associates, Inc., in conjunction with Systems Technology, Inc., can develop customized part-task trainers and simulators that address specific pilot training and evaluation needs. These devices can be designed to evaluate threat recognition and decision making in a variety of scenarios including windshear, unusual attitude training, and rejected take-offs (RTO). These devices also can provide training in ground maneuvering, airport and route familiarization, procedures, and equipment use as well as in other activities. Both the part-task trainers and simulators can be designed to evaluate the pilot's cognitive and psychomotor performance and can be used in pilot selection and evaluation programs.</p> <p>http://www.damosaviation.com/ (Retrieved on July 27, 2001)</p>	<p>Diane Damos 8939 S. Sepulveda Blvd., Ste. 200, Los Angeles, CA 90045-3605 (310) 670-4839 dianeldamos@damosaviation.com</p>
The Rotorcraft Center of Excellence	<p>The Rotorcraft Centers of Excellence are academic research centers that are managed by the NRTC and peer reviewed by a Technical Advisory Committee of Army, NASA, Navy, and Industry members. The research topics being addressed by the universities include the following: Efficient Low-Noise Rotors; Affordability (IPPD, Virtual Prototyping, Advanced Distributed Simulation); Low-Vibration Dynamic Systems; Advanced Drive Trains; Smart and Composite Structures; Day/Night Adverse Weather Capability; Highly Reliable, Safe Operations; and Digital-Optical Integrated Flight Controls. http://afdd.arc.nasa.gov/nrtc/rcoe.html (Retrieved on August 1, 2001)</p>	<p>nrtc@mail.arc.nasa.gov</p>
Georgia Tech University - Center of Excellence in Rotorcraft Technology (CERT)	<p>Georgia Tech's CERT, largest of three Army- (now NASA-) sponsored Rotorcraft Centers of Excellence, has five research areas: (1) aerodynamics and aeroacoustics; (2) rotordynamics, and aeroelasticity; (3) structures and materials; (4) flight mechanics and controls; and (5) rotorcraft design. CERT has also been successful in helping create other research laboratories and centers at Georgia Tech. These include the Aerospace Systems Design Laboratory (ASDL), the Uninhabited Aerial Vehicle (UAV) Research Facility, the Flight Simulation Laboratory (Flight Sim) and GTRI Aerospace Laboratory. In addition, CERT closely collaborates with other centers within the School of Aerospace Engineering, such as the Multi-University Intelligent Turbine Engine (MITE) Center and the Center for Aerospace Systems Analysis (CASA). Also, CERT offers advanced degrees in its discipline areas.</p> <p>http://www.usg.edu/admin/icapp/centers/gatech/gatech_rotocraft.html (Retrieved August 1, 2001)</p>	<p>Dr. Daniel P. Schrage, Director Center of Excellence in Rotorcraft Technology Georgia Institute of Technology School of Aerospace Engineering Atlanta, GA 30332- 0150 404-894-6257 (Phone), 404-894-2760 (Fax)</p>

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The Pennsylvania State University--Rotorcraft Center of Excellence	The Pennsylvania State University Rotorcraft Center for Excellence was founded in January 1996. It is funded by the National Rotorcraft Technology Center (NRTC), Army Research Office (ARO), National Aeronautics and Space Administration (NASA), as well as various corporate sponsors. The Rotorcraft Center is focused on advancement of rotorcraft research and education. Approximately 30 graduate students and 12 faculty members are focused on a wide array of rotorcraft research programs. http://www.psu.edu/dept/rcoe/research.html (Retrieved on August 1, 2001)	The Pennsylvania State University 229 Hammond Building University Park, PA 16802 Dr. Edward C. Smith, Director 814-863-0966 ecs@rcoe.psu.edu Or Dr. Lyle N. Long, Administrative Director 814-865-1172 lnl@psu.edu
University of Maryland--Department of Aerospace Engineering	Rotorcraft: Long-standing and important research is conducted in the Alfred Gessow Rotorcraft Center, as a U.S. Army Center of Excellence in Helicopter Technology. One of only three such centers in the country, the center conducts leading-edge research in rotorcraft aerodynamics, dynamics, acoustics, structures and flight mechanics. Unique experimental facilities such as two fully-instrumented rotor rigs, a hover tower and a 10-foot vacuum chamber are funded by the Army and by an industry consortium. http://www.enaе.umd.edu/home/ (Retrieved on August 1, 2001)	Dr. Inderjit Chopra, Rotor Dynamics and Smart Structures chopra@eng.umd.edu (301) 405-1122 Dr. Alfred Gessow, Aerodynamics gessow@eng.umd.edu (301) 405-1131 Dr. Norman Wereley, Smart Structures, Active and Passive Damping Control wereley@eng.umd.edu (301) 405-1927 Dr. Darryll Pines, Smart Structures; Damage Detection; and Health Monitoring djpterp@eng.umd.edu (301) 405-0263 Dr. J. Gordon Leishman, Aerodynamics leishman@eng.umd.edu (301) 405-1126 Dr. James Baeder, CFD and Acoustics

Lab/Organization	Research/Facility Description	PoC Information
		<p>baeder@eng.umd.edu (301) 405-1107 Dr. Fred Schmitz, Rotorcraft Acoustics</p> <p>fschmitz@eng.umd.edu (301) 405-0318 Dr. Roberto Celi, Flight Mechanics and Controls</p> <p>celi@eng.umd.edu (301) 405-1132 Dr. Anthony Vizzini, Composite Structures</p> <p>vizzini@eng.umd.edu (301) 405-1123</p>
<p>NASA Ames Research Center- Vertical Motion Flight Simulation Laboratory</p>	<p>At NASA Ames Research Center, in California's Silicon Valley, scientists conduct advanced research in a unique flight simulation complex. The facility provides researchers with exceptional tools to explore, define, and solve issues in both aircraft and spacecraft design. It offers fast and cost-effective solutions using real-time piloted simulation, realistic sensory cues, and the greatest motion range of any flight simulator in the world. http://www.simlabs.arc.nasa.gov/vms/vms.html (Retrieved on August 1, 2001)</p>	<p>Flight Simulation Laboratories Attn: Tom Alderete, Chief Simulation Planning Office NASA Ames Research Center Mail Stop 243-1 Moffett Field, CA 94035-1000 Phone: 650-604-3271 Fax: 650-604-3952 talderete@mail.arc.nasa.gov</p> <p>Flight Simulation Laboratories Attn: Barry Sullivan, Chief Aerospace Simulation Operations NASA Ames Research Center Mail Stop 243-1 Moffett Field, CA 94035-1000 Phone: 650-604-6756 Fax: 650-604-3952 bsullivan@mail.arc.nasa.gov</p>

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Flight Research Institute	<p>The Flight research Institute is a research and development establishment, which handles the most relevant problems of aviation and comanautics with the methods of scientific experiment using flying laboratories, model, test , and production planes. Go to website for further details on research. http://www.lii.ru/english/about.htm (Retrieved on August 1, 2001)</p>	<p>Zhukovsky-2, Moscow Region, 140182, Russia Phone: +7 (095) 556-5897 +7(095) 556-5607 Fax: +7 (095) 556-5334 Telex: 412710 SOKOL RUS secretary: postbag@lii.ru web-master: webteam@lii.ru</p>
Army Aeroflight Dynamics Directorate (AFDD)-Rotorcraft Dynamics Division	<p>Mission: Provide fundamental understanding, analytical tools, and innovative design concepts to maintain preeminent technical leadership in fundamental structural dynamics, unsteady aerodynamics, aeroelastic stability, rotor loads, vibration technology, and comprehensive analysis. Aggressively develop the associated technology, transferring results and superior tools to the U.S. aerospace community, including: prediction code validation and assessment, advanced bearingless rotor concepts, and active control of smart structures. Provide DoD aviation system developers and users with the technical expertise required to effectively acquire and field rotorcraft systems. Research Areas: Technology Opportunities, Rotorcraft Dynamics - R&D Needs and Objectives, Research Thrusts - Scientific Barriers, Integrated Aeromechanics Analysis. http://afdd.arc.nasa.gov/AFDD/RDD.html (Retrieved on August 1, 2001)</p>	<p>Dr. Chee Tung tung@merlin.arc.nasa.gov</p>
American Helicopter Society- The Vertical Flight Society	<p>AHS International -- The Vertical Flight Society is a professional, technical society, established by industry pioneers in 1943 for the purpose of advancing vertical flight. Our close to 6,000 individual members from around the world cover the entire spectrum of vertical flight industry, including government, military, civil, engineers, managers, pilots, educators, and students. Our corporate members, which number nearly 100, encompass all facets of the industry including airframe designers, turbine engine manufacturers, avionics and systems integrators, suppliers and consultants. For more than half a century, the AHS has played a leading role in the development of vertical flight technology, pursuing excellence within the industry, and stimulating research, debate and expert opinion. http://www.vtol.org/ (Retrieved on August 1, 2001)</p>	<p>AHS International Board of Directors http://www.vtol.org/BOD.html Chairman Mr. John R. Murphey President Bell Helicopter Textron P.O. Box 482 Ft. Worth, TX 76101 (817)280-5300, Fax (817)280-329 jmurphey@bellhelicopter.textron.com</p>

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Office of Naval Research	<p>Two divisions comprise the department: Medical Science and Technology; and Cognitive, Neural and Biomolecular Science and Technology. The Human Systems Department supports basic and applied research, and advanced technology development leading to applications for the Departments of Navy and Defense, and U.S. Industry. We are committed to active exploration programs that are at the leading edges of medical science, human performance, biotechnology, training and human factors, neural information processing, and biorobotics.</p> <p>http://www.onr.navy.mil/onr/v (Retrieved on July 27, 2001)</p>	<p>Dr. Harold Guard, Head of the Department (703) 696-4501 guardh@onr.navy.mil</p> <p>CAPT Timothy J. Singer, MSC, USN Deputy (703) 696-4058 singert@onr.navy.mil</p> <p>Address: Office of Naval Research Code 34 800 N. Quincy St. Arlington, VA 22217-5660</p>
NASA AMES	<p>We integrate Army and NASA rotorcraft resources at Ames Research Center to lead the Nation in rotorcraft aeromechanics, flight control, and cockpit integration research and technology development. We develop and insert these new technologies for application to both military and civil helicopters, tiltrotor aircraft, and other advanced rotary-wing aircraft. We also provide the U.S. rotorcraft industry, Department of Defense, and other Government agencies with the technical expertise required to produce and use safe, affordable, and effective all-weather rotorcraft systems.</p> <p>http://halfdome.arc.nasa.gov/ar/rotorcraft.html (Retrieved on July 12, 2001)</p>	<p>http://aerospace.arc.nasa.gov/ (July 12, 2001)</p> <p>Army/NASA Rotorcraft Division: Edwin W. Aiken (Chief). eaiken@mail.arc.nasa.gov</p>
National Rotorcraft Technology Center (NRTC)	<p>The NRTC is an innovative partnership of the US rotorcraft community. It integrates the Government, industry, and academia to aggressively address the common goal of ensuring continued superiority of US military rotorcraft while concurrently strengthening the US rotorcraft industry's' ability to compete in the global market. http://afdd.arc.nasa.gov/nrtc/govoffice.html (Retrieved on August 1, 2001)</p>	<p>The NRTC is located in Building 207 (M/S 207-1) NASA-Ames Research Center nrtc@mail.arc.nasa.gov</p>
EUROCONTROL Agency	<p>Research and Development (R&D) is a key activity in EUROCONTROL Agency. Air Traffic Management in Europe can be improved only through the research, innovation and the testing of</p>	<p>eatmp.infocentre@eurocontrol.int</p>

Lab/Organization	Research/Facility Description	PoC Information
	<p>new concepts. Research & Development in Eurocontrol is mainly carried out at the Experimental Centre in coordination with Agency Headquarters.</p> <p>R&D ACTIVITIES AT THE EUROCONTROL EXPERIMENTAL CENTRE</p> <p>The mission of the Eurocontrol Experimental Centre is to carry out Research and Development in order to support the improvement of Air Traffic Management in Europe.</p> <p>ARDEP - Analysis of R&D in Eurocontrol Organisation Programmes. The ARDEP Project collects and analyses information on European ATM R&D programmes and produces R&D project synopses which include the full list of European ATM R&D projects and their description.</p> <p>ARDA - Aviation R&D Activities - The FAA-EUROCONTROL Committee sponsors the extension of ARDEP in order to link the European information on R&D with the R&D information of FAA (US Federal Aviation Authority) and NASA (US National Air Space Agency).</p> <p>CARE - Cooperative Actions of R&D in Eurocontrol - CARE has been set up by the EUROCONTROL Agency to define co-operative actions which address R&D issues of high priority. Three level of cooperation are envisaged: Exchange (of information, expertise), Co-operation (to avoid duplication) and Collaboration (on a particular R&D project). This site includes all the information on the current and future CARE actions.</p> <p>ATM R&D Programme Review Group - The ATM R&D Programme Review Group is an advisory group made up of experienced people from national authorities and research bodies, ATM service providers and other interested groups, that provides the Eurocontrol Agency with specialist and impartial consultancy and advice on R&D. This link is for registered members only.</p> <p>FAA/ Eurocontrol R&D Committee - The web site of the Committee that coordinates R&D activities with US FAA at the Eurocontrol Organisation level. Several pages of this site are for registered members only. http://www.eurocontrol.be/eatmp/work/research.html (Retrieved on August 1, 2001)</p>	

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John A. Volpe National Transportation Systems Center	We're America's transportation systems center, an innovative, federal-fee-for-service organization within the US Department of Transportation. Air traffic management, highway and rail safety, strategic planning and economic analysis, environmental assessment, transportation logistics, and security are only some examples of our work. http://www.volpe.dot.gov/index.html (Retrieved on August 1, 2001)	Recipient's Name (add DTS Code if known) John A. Volpe National Transportation Systems Center 55 Broadway, Cambridge, MA 02142-1093 Phone: Volpe Center Operator 617/494-2000. http://www.volpe.dot.gov/contact.html (Retrieved on August 1, 2001. Can contact departments on this page)
Embry-Riddle Aeronautical University	ERAU conducts applied research for industry and government and is actively performing studies and experiments across a broad spectrum of aviation disciplines and domains. We are engaged in leading-edge research in a multitude of areas where the full capabilities of our faculty, staff, students, laboratories and facilities are brought to bear. ERAU is currently performing research under 35 funded grants and contracts valued at over \$7.1 million. Research at ERAU takes place at each of our campuses, in most of our departments, as well as within the Office of Sponsored Programs. Our research activities reflect both the needs of the aviation industry as well as the special skills and talents of our researchers. ERAU has been an active contributor to the body of knowledge in areas including air traffic control, airspace. http://www.embryriddle.edu/research/ (Retrieved on August 1, 2001)	Daytona Beach, Florida Campus, Embry-Riddle Aeronautical University 600 S. Clyde Morris Boulevard Daytona Beach, FL 32114-3900 Main Switchboard: (904) 226-6000 or (800) 222-2416
Air Transport Association of America	ATA's structure is similar to most airlines and provides an interface between the carriers and various government and private sector organizations. Key departments within the association deal with operations and safety, engineering, maintenance and materiel, airport operations, air traffic management, cargo, electronic data interchange, facilitation, federal and state government affairs, international affairs, legal affairs, passenger management, cargo, electronic data interchange, facilitation, federal and state government affairs, international affairs, legal affairs, passenger service, public relations, and security. Working with these established functions are a variety of ATA councils, committees, subcommittees and task forces, composed of experts from member airlines, formed to address industry issues. ERAU has been an active contributor to the body of knowledge in areas including air traffic control, airspace management, flight training, flight safety, meteorology, aircraft design and performance, atmospheric physics, aviation business and economics, and a	Air Transport Association of America, Inc. 1301 Pennsylvania Ave., NW Suite 1100 Washington, DC 20004-1707 Phone: +1.202.626.4000 ata@airlines.org Air Traffic Management: Vikki Avey (vavey@airlines.org), Russell Gold (rgold@airlines.org), Jack Ryan (iryan@airlines.org), Bill Sears (wsears@airlines.org),

Lab/Organization	Research/Facility Description	PoC Information
National Research Council of Canada, Flight Research Lab	<p>multitude of other areas.</p> <p>The Institute for Aerospace Research (IAR) advanced systems research aircraft (ASRA) is a Bell 412 HP helicopter specially configured with on-board research equipment for the development and testing of advanced flight systems and various modern cockpit technologies. IAR has formed a consortium of partners—Canadian avionics manufacturers, the Canadian Department of National Defence and the Natural Sciences and Engineering Research Council—to support the development of ASRA</p>	<p>Bob Zoldos (bzoldos@airlines.org)</p> <p>Ottawa iar.webmaster@nrc.ca Mr. Jeff Mackwood, B. Eng Marketing Manager National Research Council Canada Institute for Aerospace Research Montreal Road Ottawa, Ontario Canada K1A 0R6 Phone: (613) 990-0765 Fax: (613) 952-7214</p>
Defense and Civil Institute of Environmental Medicine	<p>Human Factors of Command Systems (HFCS) Objective: To contribute to effective Command and Control by conducting relevant human factors research and applying the resultant knowledge in the doctrine, design, development, test, operation and training of command systems. http://www.dciem.dnd.ca/DCIEM/research/hfc_e.html (Retrieved on July 12, 2001)</p>	<p>Mailing address: DCIEM P.O. Box 2000 1133 Sheppard Ave. West Toronto, Ontario Canada M3M 3B9 Telephone: (416) 635-2000 Facsimile: (416) 635-2104</p>
US Army Research Institute, Rotary Wing Research Unit	<p>Operate a state-of-art rotary wing simulation research facility. Conduct aircrew training research and development for Army-wide aviation applications dealing with aviator skill training and sustainment; definition of requirements for future aviation training devices and simulators; and unit combat mission training strategies and methods for AC and RC units. http://www.ari.army.mil/ (Retrieved on July 17, 2001)</p>	<p>U.S. Army Research Institute Chief, RWARU ATTN: PERI-IR Fort Rucker, AL 36362 DSN: 558-2834/3915 COM: (334)255-2834 FAX: (334) 255-9025 wightman@rwaru-emh1.army.mil</p> <p>Personnel Unit Chief, Dr. Dennis C. Wightman, Dr. John Dohme, Ms. Deloris Elmore, MAJ Jeff Graham, Mrs. Rande Hanson, Dr. William Howse, Mr. Thomas Preston, Mrs. Jane Schultz, Dr. John Stewart, Dr. Robert Wright</p>

Lab/Organization	Research/Facility Description	PoC Information
US Army Aeromedical Research Laboratory, Aircrew Health & Performance-Aeromedical Factors Branch	<p>The Aeromedical Factors Branch is a multidisciplinary research group which conducts applied laboratory and field research, development, and assessment to determine psychological, physiological, sensorimotor, and biochemical aspects of the soldier's response to the multiple stressors associate modern Army equipment, operations and tactics, missions, and developmental systems. They develop databases, conclusions, and recommendations concerning occupational hazards, workload, and biomedical technology to sustain soldier safety and combat crew efficiency and effectiveness. Research includes the disciplines of aviation medicine, physiology, psychology, biomedical engineering, human factors, biochemistry, hazardous environments of crew stations and combat vehicles. The branch also translates research results into relevant health criteria for material development, doctrine, and operations. http://www.usaarl.army.mil/ahpdivision.htm - aeromedical (Retrieved on July 17, 2001)</p>	<p>Diana Hemphill Diana.Hemphill@amedd.army.mil</p>
University of Central Florida, Center for Applied Human Factors in Aviation	<p>CAHFA focuses its research on making it safer and easier for people to use aeronautical systems, on achieving sophistication without complication. ERAU, with campuses in Daytona Beach, Florida, and Prescott, Arizona, provides CAHFA with superb research and testing facilities including the Airway Sciences Simulation Laboratory. http://132.170.117.229/cahfa/default.htm (Retrieved on July 17, 2001)</p>	<p>To Contact us: CAHFA The Center for Applied Human Factors in Aviation Psychology Department University of Central Florida P.O. Box 161780 Orlando, FL 32816-1780 Phone: (407) 823-2216 Fax: (407) 823-5862 vincenzd@db.erau.edu http://132.170.117.229/cahfa/page3.htm (Retrieved on July 17, 2001)</p>
University of Illinois Institute of Aviation, Aviation Research Lab	<p>Two areas of research: Visual information processing and visual displays. How does the pilot integrate information from the visual world outside the aircraft, as well as from flight instruments, necessary to support low level flight and aircraft landing? How can synthetic electronic displays be designed to best facilitate information integration by capitalizing on three-dimensional geometry, texture, motion, and color? How can computational models of human performance predict the ideal layout and integration of flight instruments to support low level flight? Spatial awareness. How can the pilots' understanding of aircraft attitude and position over ground be modeled? How can this understanding be best supported by electronic navigation aids (e.g., electronic maps, predictive displays, outside-in perspective, terrain and weather representation)</p>	<p>AviationWebMaster@uiuc.edu Faculty: http://www.aviation.uiuc.edu/new/html/ARL/faculty.htm (Retrieved on July 17, 2001)</p>

Lab/Organization	Research/Facility Description	PoC Information
Ohio State University, Department of Aviation	<p>The Aerospace Engineering Program comprises a stimulating group of distinguished faculty, energetic graduate students, and enthusiastic undergraduates, supported by comprehensive laboratories and extensive computer facilities all focused upon the challenges of flight. The proper aerodynamic shape, the correct engine for clean propulsion, the best materials for light-weight structures, and the safest control systems must be integrated to produce an efficient and economical flying machine. In addition, these challenges must be met across the broad spectrum of flight, from the low-speed, near-earth hovering of helicopters to the supersonic flight of our present day aircraft to the extreme speeds and ranges of our future aircraft and spacecraft. Our faculty bring their expertise in the varied disciplines of aerospace engineering to the classroom and laboratory and use extensive research activities to enhance their lectures. The Ohio State University's Aviation Section is part of the department of Aerospace Engineering, Applied Mechanics and Aviation. It is leading the world in the areas of human factors research, flight education, and high technology in the classroom. For more than 50 years the Aviation Section at Ohio State has provided the national airspace system with highly qualified and concerned professionals. http://www.aerospace.ohio-state.edu/ (Retrieved on August 1, 2001)</p>	<p>The Ohio State University, Aviation Section 164 W. 19th Ave. Columbus, Ohio 43210 USA. Phone: (614)292-2405 Fax: (614)292-1014.</p> <p>Aerospace Engineering 2036 Neil Ave. Mall Bolz Hall, Room:328 Columbus, Ohio 43210-1276 614 292 2691 (phone) 614 292 8290 (fax) aaa@www-aaa.eng.ohio-state.edu</p>
Bell Helicopter-Textron	<p>More than fifty years of experience and over 33,000 helicopters produced. The world leader in rotorcraft design, production and support. Bell's primary objective is to provide the best products backed by the most thorough and comprehensive training, service and support systems in the industry. http://www.bellhelicopter.textron.com/index.html (Retrieved on July 17, 2001)</p>	<p>http://www.bellhelicopter.textron.com/contactUs/ (July 17, 2001) Bell Helicopter Textron Inc. PO Box 482 Ft. Worth, Texas 76101 Voice:(817)280-2900/(800)FLY-BELL Fax: (817)278-0999</p>
Walter Reed Us Army Institute of Research , Division of Neuropsychiatry	<p>Military operations are often conducted at high tempo, on a 24 hour-per-day basis, for extended periods, and may involve rapid deployment across multiple time zones. Under such operational conditions, the ability to obtain adequate, recuperative sleep is compromised—resulting in alertness and performance deficits in soldiers engaged in mission-critical tasks. The Department of Neurobiology and Behavior conducts both basic and applied research with the aim of sustaining optimal performance and alertness in the operational environment. Recent basic research efforts include brain-imaging studies to determine the physiological basis of sleepiness and subsequent</p>	<p>Dr. Tom Balkin, Ph. D. (Department Chief) Phone: (301) 319-9350 Ms. Mozelle Parker (Administrative Support) Phone: (301) 319-9945 Dr. Gary Kamimori, Ph.D. Phone: (301) 319-9714 Dr. Cynthia LaJambe, Ph.D. Phone: (301) 319-9814</p>

Lab/Organization	Research/Facility Description	PoC Information
	<p>recuperation during recovery sleep. Ongoing applied research efforts include development of strategies to optimize control over the timing and duration of sleep/wake states through administration of pharmaceutical agents that act primarily at the brain's internal "clock" (or "circadian pacemaker") versus those that act more generally to reverse sleep debt-dependent (i.e., homeostatically controlled) reductions in brain activity. http://wrair-www.army.mil (Retrieved on July 17, 2001)</p>	<p>Dr. Nancy Wesensten, Ph.D. Phone: 319-9248 CPT Mary Kautz, Ph.D. Phone: (301) 319-9332 SPC Janise Brown Phone: (301) 319-9908 SPC Debra Longworth Phone: (301) 319-9421 Ms. Rebecca Reichardt Phone: (301) 319-9892</p>
<p>Royal Air Force Institute of Aviation Medicine</p>	<p>Support activated such as: Real-time simulations, Fast-time simulations for internal or external customers, Experimental projects using simulation platforms, Collection of technical requirements, Production of the technical specifications, Production of generic requirements for the evolution and improvement of real-time and fast-time platforms (either according to customer needs or pro-actively), Hardware procurement of simulation platforms including: purchase, provision, integration, test-bed, operational integration and validation, Systems configuration and validation, including acceptance of new/different versions, Deployment of simulation platforms on external sites, Delivery of the successive versions of the real time simulation platform to both EEC internal and external customers, Outsourcing to industry of support and maintenance services. http://www.defence.gov.au/aerospacecentre/ (Retrieved on August 1, 2001)</p>	<p>Institute of Aviation Medicine (AVMED) RAAF Base Edinburgh South Australia 5111 Phone: (08) 8393 3159 Fax: (08) 8393 3158 avmed.webmaster@defence.gov.au</p>
<p>Sikorsky Aircraft Corp</p>	<p>The Sikorsky and Boeing Helicopters team is developing the US army's new armed reconnaissance helicopter the RAH-66 COMANCHE http://www.rah66comanche.com/. The program won a \$3.1 billion Engineering and Manufacturing Development contract in the spring of 2000. The team will manufacture and deliver five new Comanche helicopters for EMD testing. Sikorsky is leading an international team to produce the S-92 http://www.sikorsky.com/programs/s92/index.html helicopter. http://search.atomz.com/search/?sp-q=Research&sp-a=sp1000f4ca (Retrieved on August 1, 2001)</p>	<p>http://www.sikorsky.com/contacts/index.html (July 17, 2001) 1(800)-946-4337 sikorskywcs@sikorsky.com</p>

Lab/Organization	Research/Facility Description	PoC Information
Honeywell Technology Center	<p>The scope of the AATT Program covers block-to-block operation of aircraft worldwide. The program will initially be concerned with the enroute airspace operations but will expand to include first the terminal area airspace and then ground operations. The AATT program builds on and integrates with other programs such as the NASA CTAS and TAP Programs which are focused on TRACON and Center automation and the terminal area and surface movement respectively. The primary focus of the AATT program will be on procedures, information exchange technology integration, and human-centered automation tools. The global airspace system and the process of providing user preferences is through a triad of People, Procedures, and Technologies. The AATT program also focuses on improving the ability to model and simulate the airspace system and its sub components, and then applying this modeling capability to study and evaluate proposed improvements. http://www.htc.honeywell.com/projects/aatt/ (Retrieved on July 17, 2001)</p>	<p>Dr. Bill Corwin Honeywell Technology Center 3660 Technology Drive Minneapolis, MN 55418 Mailstop: MN65-2600 Office: 2616 Phone: (612)951-7745 Fax: (612)951-7438 corwin@src.honeywell.com</p>
Glasgow Caledonian University- Department of Mathematics	<p>Rotorcraft Flight Dynamics - Research Information: The rotorcraft flight dynamics group carries out research into the mathematical modeling and simulation of rotary winged vehicles. This includes fundamental modeling of new configurations such as tilt-wing/rotor and the development of efficient algorithms for calculating trim and stability analysis. The research extends to mathematical modeling of the human pilot for handling qualities and workload studies and to the analysis and simulation of atmospheric turbulence and wakes round buildings and ships. The mathematical techniques involved in this work include wavelet analysis and non-linear control. http://www.maths.gcal.ac.uk/Researchflight.html (Retrieved on July 17, 2001)</p>	<p>Prof. Roy Bradley Professor and Head of Department of Mathematics Research Interests: 1. Rotorcraft Flight Dynamics (Group leader) 2. Trimming algorithms and stability analysis for aircraft 3. Wavelet analysis Phone: + 44 141 331 3610 Fax: + 44 141 331 3608 r.bradley@gcal.ac.uk</p>

Lab/Organization	Research/Facility Description	PoC Information
Applied Systems Intelligence, Inc	<p>Rotorcraft Pilot's Associate: The Rotorcraft Pilot's Associate (RPA) is an advanced crew decision aiding system for combat helicopters. The RPA consists of subsystems for data distribution, data fusion, assessment, planning, and cockpit information management. The subsystem activities are coordinated by the Task Network Scheduler (TNS) from within the Task Network Architecture (TNA). Urban Helicopter Pilotage Systems: This project produced the first ever "lightweight" cognitive decision aiding system (CDAS) for urban helicopter pilots (e.g. Police, EMS, media), meaning that the entire system will be contained on a single laptop computer.</p> <p>Pilot's Associate: This project was the foundation advanced decision support project of the Defense Advanced Research Projects Agency. It developed the concept of multiple cooperating expert systems working together to aid fighter pilots of the next generation advanced tactical fighter. http://www.asinc.com/ASINCMain.htm (Retrieved on July 17,2001)</p>	<p>Applied Systems Intelligence 11660 Alpharetta Hwy, Suite 720 Roswell, GA 30076 info@asinc.com</p>
Naval Rotary Wing Aircraft Test Squadron	<p>The Naval Rotary Wing Aircraft Test Squadron (NRWATS) conducts rotary wing and tilt rotor developmental flight test and evaluation for the Navy and Marine Corps in the interest of providing the fleet with quality products with which to meet fleet mission requirements.</p>	<p>Commander Attn: Name, Code, Bldg. 111, Suite 2A NAWCAD 22755 Saufley Road, Unit 1 Patuxent River, Maryland 20670-1619 Patuxent River, MD FAX: (301) 342-7532 Commercial: (301) 342-1762 {DSN: 342-1762}</p>
Department of Aeronautical Engineering, Sydney University	<p>Flight Mechanics, Human Factors - vestibular functions, visual perception, situational awareness, crew performance & cockpit interaction, cockpit ergonomics, operational efficiency. Training and Operations http://www.aero.usyd.edu.au/staff/jai.htm (Retrieved on July 19, 2001)</p>	<p>Jehangir Madhani Room N233, Aeronautical Engineering Building J07 Department of Aeronautical Engineering University of Sydney, NSW, 2006 Australia NSW, Australia jai@aero.usyd.edu.au</p>
MIT- Man Vehicle Laboratory (MVL)	<p>The laboratory's goal is to optimize human/vehicle system safety and effectiveness by improving our understanding of human physiological and cognitive capabilities. Research is interdisciplinary, utilizing techniques from manual and supervisory control, estimation, signal processing, biomechanics, cognitive psychology, artificial intelligence, sensory-motor physiology, human</p>	<p>MIT Man Vehicle Laboratory Bldg 37-219 77 Massachusetts Avenue Cambridge, MA 02139</p>

Lab/Organization	Research/Facility Description	PoC Information
	<p>factors, and biostatistics, The laboratory has several ongoing space flight experiments and projects sponsored by the National Space Biomedical Institute. Other research focuses on control of posture and environments, and physiological and human factors aspects of EVA and artificial gravity systems. http://mvl.edu (Retrieved on August 1, 2001)</p>	
Qinetiq	<p>Aircraft Platform Technologies QinetiQ's huge expertise and extensive facilities enable the research and development of cutting-edge avionics, cockpit systems and airframes for both civil and military aircraft. QinetiQ has huge expertise in the design and test phase of new platform development, working to provide solutions in the areas of aerodynamics, structures, EMC, air traffic and flight management, systems and sensor integration, cockpit systems, avionics and jet engines. Many of our platform technologies and capabilities are relevant to both civil and military marketplaces and our innovations often benefit both. QinetiQ works extensively on new military aircraft platforms such as Eurofighter, FOAS, Joint Strike Fighter, A400M, FSTA and on extensions of known aircraft technologies such as unmanned aerial vehicles and airships. Affordability and operational effectiveness are our prime drivers. Our extensive trials facilities enable us to react quickly to customer requests for solutions to problems. Our across-the-board capability extends to the operating domain with in-depth knowledge of contingency planning, human factors, training, extensive modeling and simulation in support of customer requirements. QinetiQ has an impressive track record of innovation in materials and electronic systems, including world-class advances in key technologies such as carbon fibres.</p>	<p>Customer Contact Team QinetiQ Ltd Ively Road Farnborough Hampshire GU14 0LX United Kingdom Telephone: +44 (0)8700 100 942 centralenquiries@qinetiq.com</p>
EUROCONTROL- European Organization for the Safety of Air Navigation	<p>To provide an industry based reference validation platform and integration facility to EATMP and EC validation projects. To support the developing and confirming ECIP objectives. To participate in the EC 5th Framework Gate2Gate 2005 consortium. To provide an open, transparent and neutral environment conducive to bringing competing industries together. http://www.eurocontrol.fr/ (Retrieved on August 1, 2001)</p>	<p>Eurocontrol Experimental Centre Centre de Bois des Bordes BP15 F-91222 Bretigny sur Orge CEDEX FRANCE Phone: +33 1 69 88 75 00 Fax: +33 1 69 88 75 05 accueil@eurocontrol.fr</p>

4. ADDITIONAL READINGS OF INTEREST

HSIAC has identified the following documents through our in-house and local technical library collection of human engineering-related technical reports, handbooks, journals, and standards. Some references were identified based on second-generation leads, such as the bibliographies of documents and journal articles published on this topic.

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5. ORDERING DOCUMENTS

5.1 DEFENSE TECHNICAL INFORMATION CENTER (DTIC)

DTIC is the central repository for documents resulting from research supported by the Department of Defense (DoD). DTIC maintains several databases, including the Technical Report (TR) database, Technical Effort and Management System (TEAMS) database, and Independent Research and Development (IR&D) database.

Documents from the TR database are identified by an accession number that begins with "AD," such as AD-A123 456. To order DTIC documents, organizations must have a deposit account established with the National Technical Information Service (see below), against which document ordering fees will be charged. Call DTIC if you do not have information on establishing a deposit account with NTIS. When ordering documents from DTIC, please cite your DTIC User Code.

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5.2 NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)

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<mailto:orders@ntis.fedworld.gov>
<http://www.fedworld.gov/ntis/ntishome.html>

5.3 HUMAN SYSTEMS INFORMATION ANALYSIS CENTER (HSIAC)

It is recommended that you discuss potential document orders with your in-house or local technical information specialist. He or she will know the most appropriate method to place orders for documents identified in this report. If questions do arise, please feel free to contact the Human Systems Information Analysis Center (HSIAC) at the address below.

AFRL/HEC/HSIAC
2261 Monahan Way, Bldg. 196
Wright-Patterson AFB, OH 45433-7022
Phone: (937) 255-4842
FAX: (937) 255-4823
<mailto:hsiac@wpafb.af.mil>
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About Human Systems IAC

The Human Systems Information Analysis Center (Human Systems IAC, HSIAC) is the gateway to worldwide sources of up-to-date human factors and ergonomics information and technologies for designers, engineers, researchers, and human factors specialists. Human Systems IAC provides a variety of products and services to government, industry, and academia while promoting the use of human factors and ergonomics in the design of human-operated equipment and systems.

Human Systems IAC's primary objective is to acquire, analyze, and disseminate timely information on human factors and ergonomics. In addition to providing free basic searches, Human Systems IAC performs other services on a cost-recovery basis:

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ATTACHMENT A

SEARCH STRATEGY STATEMENT FOR LITERATURE REVIEW SUPPORT TO THE FEDERAL AVIATION ADMINISTRATION (FAA) OFFICE OF THE CHIEF SCIENTIST FOR HUMAN FACTORS (AAR-100)

HUMAN FACTORS IN VERTICAL FLIGHT

PURPOSE

The Federal Aviation Administration (FAA) requires information in the area of human factors associated with vertical flight (e.g., helicopter, rotorcraft, tilt-rotor) operations within the National Airspace (NAS). Thus, the Office of the Chief Scientist for Human Factors (AAR-100) must have a comprehensive understanding of (1) the extent of national and international human factors research directed toward vertical flight air crew performance especially dealing with flight and navigation instrumentation; (2) the most significant research along with its conclusions and recommendations; and (3) the national and international vertical flight research resources available to include government labs, universities, and contractors.

BACKGROUND

This issue concerns the simultaneous non-interfering (SNI) operations of visual flight rules (VFR) helicopters and instrument flight rules (IFR) and VFR fixed wing traffic in the same airspace. The requirement to implement an appropriate infrastructure for helicopter and tilt-rotor aircraft is highlighted in the Agency's Performance Plan. One of the necessary elements of redesigning the airspace infrastructure is the evaluation of new technological solutions that will allow VFR/IFR helicopters to fly safely in SNI operations. This requirement raises several human factors questions that pertain specifically to vertical flight operations that must be answered before SNI operations can become a reality.

TASK

Human Systems Information Analysis Center (HSIAC) will conduct a comprehensive literature search of relevant sources that have been published for information concerning human factors associated with vertical flight in environments similar to SNI operations. The literature and source search shall be designed to answer the following questions:

- ✓ What would be considered the minimal flight instrumentation for safe VFR SNI helicopter operations?
- ✓ What would be acceptable pilot performance skills and abilities to conduct such flights?
- ✓ What should be the minimum amount of protected airspace required for the VFR helicopter flying a SNI leg/route from a human performance standpoint?

In addition, Human Systems IAC shall prepare a list of international research facilities (Government, University, and Contractor) having subject-matter expertise in the area of human factors associated with helicopter aircrew performance. The list should also include points of contact with current phone, email, and addresses and a brief capabilities overview and research highlights for each.

SUGGESTED SEARCH TERMS/STRATEGY

transportation

aircraft

helicopter

rotor-wing

rotorcraft

tilt-rotor

vertical flight

vertical flight IFR terminal area

procedures (VERTAPS)

terminal flight activities

and

human factors (engineering)

avionics

airspace (requirements)

margin of safety (requirements)

simultaneous non-interfering (SNI)

operations

visual flight rules (VFR)

instrument flight rules (IFR)

human performance

flight/navigation instrumentation

maneuverability

SUGGESTED DATABASES

Abstracts in New Technologies and Engineering (ANTE)

Aerospace Database

Applied Social Sciences Index and Abstracts

Dissertation Abstracts

EiCompendex

Federal Research in Progress (FEDRIP)

IHS International Standards and Specifications

INSPEC

National Technical Information Service (NTIS)

PsycINFO

SciSearch

Transportation Research Information Service (TRIS)

Wilson Applied Science & Technology Abstracts

ATTACHMENT B

NONCOPYRIGHTED LITERATURE SEARCH RESULTS

- AN (1) AD-A384 535/XAG
FG (2) 010400
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) Impact of Aviation Highway-in-the- Sky Displays on Pilot Situation
Awareness
DN (9) Final rept.
AU (10) Williams, Kevin W.
RD (11) Oct 2000
PG (12) 13 Pages
RN (18) DOT/FAA/AM-00/31
XH-DOT
RC (20) Unclassified report
DE (23) *DISPLAY SYSTEMS, *FLIGHT SIMULATORS, *SITUATIONAL AWARENESS
VELOCITY, COCKPITS, TRAFFIC, SECONDARY, INTERCEPTION, PILOTS, FLIGHT,
GUIDANCE, AWARENESS
ID (25) HITS(HIGHWAY-IN-THE-WAY)
AB (27) Thirty-six pilots were tested in a flight simulator on their ability to
intercept a pathway depicted on a highway-in-the-sky (HITS) display.
While intercepting and flying the pathway, pilots were required to
watch for traffic outside the cockpit. Additionally, pilots were tested
on their awareness of speed, altitude, and heading during the flight.
Results indicated strong practice effects for a pilot's ability to
intercept the pathway and that the presence of a flight guidance cue
significantly improved performance. The ability to spot traffic was
more affected by task difficulty than by display appeal. New display
concepts are needed for supporting secondary flight information present
on the HITS display. Recommendations for training and use of HITS
displays are given, along with recommendations for display enhancements
to support situation awareness.
- AN (1) AD-A384 889/XAG
FG (2) 050800
050900
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK
AERONAUTICAL CENTER
TI (6) The Relationship Between Aviators' Home-Based Stress To Work Stress and
Self- Perceived Performance
DN (9) Final rept.
AU (10) Fiedler, Edna R.
Rocco, Pam D.
Schroeder, David J.
Nguyen, Kiet T.
RD (11) Oct 2000
PG (12) 10 Pages
RS (14) DOT/FAA/AM-00/32
RN (18) XH-FAA-AM
RC (20) Unclassified report
DE (23) *JOBS, *NAVAL SHORE FACILITIES, *LIVING STANDARDS
STRESSES, GLOBAL, ENVIRONMENTS, COCKPITS, STRESS(PSYCHOLOGY),
PILOTS,
DIES, QUALITY, HELICOPTERS, FLIGHT, DOMESTIC, AIRPORTS,
QUESTIONNAIRES,
PERCEPTION, AWARENESS
ID (25) STRESS
AB (27) This paper investigates the relationship between domestic-based stress
and pilots' perceptions of their effectiveness in the cockpit and in
die office. Despite the importance placed on the family as a source of
social support, there have been few systematic studies of the
relationships between pilot family life, workplace stress, and
performance. As part of a larger study, 19 United States Coast Guard
(USCG) helicopter pilots at two air stations completed a stress

questionnaire (adapted from Cooper and Sloan, 1986), rated the importance of various coping strategies, and evaluated their own flying performance. The results of this study indicate that the effects of domestic stress carry over to the pilots' work world, directly influencing work stress and indirectly affecting pilots' perceptions of their flying performance. The positive influence of home life in mediating stress was noted when pilots were asked to rate the importance of various coping strategies. Pilots rated three aspects of home life as the most 'important' factors in helping them cope with problems or stress. Thus, domestic-related issues were very important to this group of USCG pilots, suggesting the need for management to maintain awareness of how the quality of home life may affect the work environment and overall performance.

AN (1) AD-A385 597/XAG

FG (2) 060700

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Galactic Cosmic Radiation Exposure of Pregnant Aircrew Members II

AU (10) Nicholas, Joyce S.

Copeland, Kyle

Duke, Frances E.

Friedberg, Wallace

O'Brien, Keran

RD (11) Oct 2000

PG (12) 8 Pages

RN (18) DOT/FAA/AM-00/33

XH-DOT

RC (20) Unclassified report

DE (23) *PREGNANCY, *RADIATION EFFECTS, *GALACTIC COSMIC RAYS FLIGHT CREWS, RADIATION PROTECTION, EXPOSURE(PHYSIOLOGY), IONIZING RADIATION, AEROSPACE MEDICINE, OCCUPATIONAL MEDICINE

AB (27) In its 1990 recommendation regarding occupational exposure during pregnancy, the International Commission on Radiological Protection apparently assumed that the equivalent dose to a pregnant woman's abdomen is reduced by half in traversing the body to the conceptus. This assumption was tested with respect to galactic cosmic radiation, the principal ionizing radiation to which aircrews are exposed. We calculated the equivalent dose that would be received at depths of 0, 5, 10, and 15 centimeters in a 30-centimeter thick, soft-tissue slab phantom, at several locations in the atmosphere and on two air carrier flights, and found that the dose was almost the same at all the tissue

depths studied. Thus, the assumption of considerable shielding of the conceptus by the woman's body is not valid with respect to galactic cosmic radiation. The effective dose of galactic radiation to the mother was found to be a good estimate of the equivalent dose to the conceptus.

AN (1) AD-A384 551/XAG

FG (2) 010300

110700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Development of Improved Flammability Criteria for Aircraft Thermal Acoustic Insulation

DN (9) Final rept.

AU (10) Marker, Timothy

RD (11) Sep 2000

PG (12) 86 Pages

RN (18) DOT/FAA/AR-99/44

XH-DOT/FAA/AR

RC (20) Unclassified report

DE (23) *FLAMMABILITY, *THERMAL INSULATION, *ACOUSTIC INSULATION TEST AND EVALUATION, FUSELAGES, INFLIGHT, AIRCRAFT EQUIPMENT, FLAME PROPAGATION, JET ENGINE FUELS, CRASHES, FIRE RESISTANT MATERIALS, BURNTHROUGH, RADIANT HEATING PANELS

ID (25) VERTICAL BUNSEN BURNER TEST, COTTON SWAB TEST, RADIANT PANEL TEST

AB (27) A large number of small-, intermediate-, and full-scale flame propagation tests representative of an in-flight fire were conducted on various thermal acoustic insulation blanket materials. Results indicated that the current Federal Aviation Administration (FAA) vertical Bunsen burner test requirement could not adequately discriminate between poorly performing materials and materials that performed well under realistic fire scenarios. A radiant panel laboratory test was shown to be an effective method for evaluating the in-flight fire resistance qualities of thermal acoustic insulation. In addition, a new laboratory test was developed for evaluating the postcrash fire burnthrough resistance of thermal acoustic insulation. The test method was based on full-scale tests in which a fuselage structure was subjected to jet fuel fires. Approximately 60 burnthrough tests were conducted on a variety of insulation materials. Insulation materials compliant with the new burnthrough test method will provide a minimum of 4 minutes of protection against a postcrash fuel fire.

AN (1) AD-A384 904/XAG
FG (2) 010200
010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Integrated Icing Diagnostic Algorithm (IIDA) Assessment at Regional
Airlines Final Report

DN (9) Final rept.

AU (10) Sims, Danny

Carty, Thomas

Fidalgo, Cynthia

RD (11) Sep 2000

PG (12) 82 Pages

RS (14) DOT/FAA/CT-TN00/18

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

NO (21) Prepared in collaboration with Raytheon.

DE (23) *ICE FORMATION, *ICE FORECASTING

WEATHER FORECASTING, COMMERCIAL AVIATION, INFLIGHT

ID (25) IIDA(INTEGRATED ICING DIAGNOSIS ALGORITHM)

AB (27) This report summarizes the Integrated Icing Diagnostic Algorithm (IIDA) assessment conducted by ACT-320 at Atlantic Coast Airlines and Air Wisconsin from September 1998, through May 1999. The IIDA, developed by scientists at the National Center for Atmospheric Research (NCAR), combines a number of inflight icing detection techniques into an integrated algorithm that makes use of the strengths of each technique. The algorithm output consists of three dimensional grids of Icing Potential and Supercooled Large Drop Potential, augmented by several intermediate products to aid in assessing in-flight icing conditions. Feedback was collected from airline dispatchers and focused on the utility and perceived benefit of IDA, along with suggested enhancements for dispatcher use. Assessment results indicated that IIDA was useful to airline dispatch operations, with the potential to be used for several dispatcher job task areas. It was recommended that IIDA be considered for adoption as an official aviation weather product.

AN (1) AD-A384 982/XAG

FG (2) 010305

130400

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ FIRE

SAFETY SECTION

TI (6) Development of a Minimum Performance Standard for Aircraft Cargo
Compartment Gaseous Fire Suppression Systems

DN (9) Final rept.

AU (10) Reinhardt, John W.

Blake, David

Marker, Timothy

RD (11) Sep 2000

PG (12) 85 Pages

RS (14) DOT/FAA/AR-00/28

RN (18) XH-DOT/FAA/AR

RC (20) Unclassified report

DE (23) *COMMERCIAL AIRCRAFT, *FIRE PROTECTION, *AVIATION SAFETY,
*TRANSPORT

AIRCRAFT, *FIRE SUPPRESSION

TEST AND EVALUATION, CARGO VEHICLES, AEROSOLS, SCALE MODELS,
THREATS,

EXPLOSIONS, TEST METHODS, COMPARTMENTS, OXYGEN, REPLACEMENT,
CANISTERS,

FIREPOWER, FIRE EXTINGUISHING AGENTS, DECOMPOSITION,

REPRODUCIBILITY,

PASSENGERS, WATER SUPPLIES, FLUORINATED HYDROCARBONS, MIST,

AIRCRAFT

CABINS

ID (25) GASEOUS HYDROFLUOROCARBON

AB (27) This report documents the test results of the testing conducted during the development of a minimum performance standard for aircraft cargo compartment gaseous fire suppression systems. It also includes the final version of the standard. The development work was performed in conjunction with the International Halon Replacement Working Group.

AN (1) AD-A385 812/XAG

FG (2) 170703

010400

010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) The Computerized Analysis of ATC Tracking Data for an Operational
Evaluation of CDTI/ADS-B Technology

DN (9) Final rept.

AU (10) Mills, Scott H.

RD (11) Sep 2000

PG (12) 12 Pages
RS (14) DOT/FAA/AM-00/30
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DATA DISPLAYS
AVIONICS, OPERATIONAL EFFECTIVENESS, HUMAN FACTORS ENGINEERING,
COMMERCIAL AVIATION, AIRCRAFT EQUIPMENT, COMPUTER AIDED
DIAGNOSIS,
FLIGHT DECKS
ID (25) CDTI(COCKPIT DISPLAY OF TRAFFIC INFORMATION)
AB (27) In 1999, the Cargo Airlines Association and the Federal Aviation
Administration conducted an operational evaluation (OpEval) of Cockpit
Display of Traffic Information (CDTI) and Automatic Dependent
Surveillance - Broadcast (ADS-B) technologies at the Airborne Express
Airpark in Wilmington, Ohio. This evaluation was designed to
demonstrate the benefits of CDTI, including safety, efficiency, and
capacity. The evaluation included 13 aircraft of various types and
their flight crews. The aircraft flew multiple flight patterns during
the morning and the afternoon of a single day. Each traffic pattern
flown by each aircraft was assigned to either the CDTI or baseline (no
CDTI) condition. Human factors observers recorded data from the flight
decks and the control tower. In addition, air traffic control (ATC)
data were recorded by the participating ATC facilities. An important
part of the analysis of such a demonstration is the examination of
objective flight data. Because of the complexity of the OpEval, new
computerized analysis techniques were developed and conducted. This
paper describes those techniques in detail, as well as the results of
the analysis. Methods such as those described here will be increasingly
important as new technologies are developed and evaluated
operationally.

AN (1) AD-A382 809/XAG
FG (2) 050100
050900
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) The Impact of Teams on the Climate for Diversity in Government: The FAA
experience
DN (9) Final rept.
AU (10) Naff, Katherine C.
Thompson, Richard C.
RD (11) Aug 2000

PG (12) 19 Pages
RN (18) DOT/FAA/AM-00/27
XH-DOT
RC (20) Unclassified report
DE (23) *IMPACT, *TEAMS(PERSONNEL), *WORK, *PERCEPTION, *GOVERNMENT
EMPLOYEES
JOBS, ENVIRONMENTS, MODELS, MINORITIES, SURVEYS, PLANNING, CLIMATE,
PERSONNEL, BEHAVIOR, JUDGEMENT(PSYCHOLOGY), COOPERATION,
SUPERVISION
ID (25) MODEL WORK ENVIRONMENT PLAN
AB (27) This study examined the effect of teamwork on diversity-related
perceptions of the FAA workforce. Recent research suggests that one
means of improving the diversity climate of an organization is through
the implementation of teams. To assess this conjecture in the FAA,
three measures of diversity climate perceptions were examined: employee
perceptions of the agency's success in elimination of hostile work
environment behaviors, success of the Model Work Environment plan, and
personal support for the model work environment vision. Teamwork and
organization were examined, controlling for minority status, gender,
age, supervisory status, agency and job tenure, and work setting. The
results suggest that working as a member of an occupational work team
is related to improved perceptions of the diversity climate, but
organizational differences do exist. Overall, it appears that the size
of the relationship between teamwork and diversity climate is
influenced by the degree to which the survey measures focused on
specific behaviors versus higher level judgements. Specifically,
behaviorally focused measures showed a stronger relationship with
teamwork than did measures of support for the agency's diversity
climate vision.

AN (1) AD-A382 989/XAG
FG (2) 010600
050100
131200
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) Controlled Flight Into Terrain: A Study of Pilot Perspectives in Alaska
DN (9) Final rept.
AU (10) Bailey, Larry L.
Peterson, Linda M.
Williams, Kevin W.
Thompson, Richard C.

RD (11) Aug 2000
PG (12) 48 Pages
RS (14) DOT/FAA/AM-00/28
RN (18) XH-DOT/FAA/AM
RC (20) Unclassified report
DE (23) *AVIATION ACCIDENTS, *AVIATION SAFETY
PILOTS, ALASKA, HUMAN FACTORS ENGINEERING, COMMERCIAL AVIATION,
QUESTIONNAIRES, PERCEPTION(PSYCHOLOGY), REACTION(PSYCHOLOGY),
ACCIDENT
INVESTIGATIONS, RISK ANALYSIS
ID (25) HFACS(HUMAN FACTORS ACCIDENT CLASSIFICATION SYSTEM)
AB (27) This report presents the results of a survey designed to identify pilot
and organizational risk factors of having a controlled flight into
terrain (CFIT) accident in Alaska. The population consisted of
commercial (passenger and freight) Alaskan pilots who operated under
Parts 135, 133, 125 and/or 121 Federal Aviation Regulations (FARs). A
103-item questionnaire was developed covering the following domains: 1.
organizational influences, 2. unsafe supervision, 3. preconditions for
unsafe pilot acts, and 4. unsafe pilot acts. Pilots were pre-coded into
one of two groups based on whether their current employer had
experienced a CFIT accident within a five-year period (1992-1997).
Response rates across both groups were 20% and although lower than
desired, it was not unusual for surveys of this nature. Survey results
revealed that having to fly in marginal weather conditions was a common
experience for all respondents. However, pilots who worked for
companies who had a CFIT accident rated their company's safety climate
and practices significantly lower than pilots who worked for CFIT
accident free companies. Based on the survey results and considering
the findings of the Aviation Safety in Alaska report (National
Transportation Safety Board, 1995) the following recommendations were
developed to reduce the number of CFIT accidents in Alaska: 1. increase
pilot awareness of CFIT safety-related issues, 2. improve company
safety culture, 3. improve pilot training in the environment in which
they commonly fly, 4. improve weather briefings, and 5. eliminate
pressure to complete a flight.

AN (1) AD-A382 669/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
POLICY AND PLANS
TI (6) General Aviation and Air Taxi Activity Survey
DN (9) Annual rept.

RD (11) Jul 2000
PG (12) 132 Pages
RS (14) FAA-APO-110
RN (18) XH-DOT
RC (20) Unclassified report
DE (23) *AIRCRAFT, *STATISTICS, *CIVIL AVIATION
UNITED STATES, LIFE EXPECTANCY(SERVICE LIFE), REGIONS, FLIGHT,
AIRFRAMES, TABULATION PROCESSES
AB (27) This report presents the results of the annual General Aviation and Air
Taxi Activity Survey. The survey is conducted by the FAA to obtain
information on the activity of the United States registered general
aviation - and air taxi aircraft fleet. The report contains tabulations
of active aircraft, annual flight hours, average flight hours, and
other statistics by aircraft type, state and region of based aircraft,
and use. Also included are file: consumption, lifetime airframe hours,
estimates of the number of landings, and IFR hours flown.

AN (1) AD-A382 812/XAG
FG (2) 010600
050900
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) The Effects of Performance Feedback on Air Traffic Control Team
Coordination: A Simulation Study
DN (9) Final rept.
AU (10) Bailey, Larry L.
Thompson, Richard C.
RD (11) Jul 2000
PG (12) 13 Pages
RN (18) DOT/FAA/AM-00/25
XH-DOT
RC (20) Unclassified report
DE (23) *SIMULATION, *TRAINING DEVICES, *PERFORMANCE(HUMAN),
*TEAMS(PERSONNEL),
*AIR TRAFFIC CONTROLLERS
DENSITY, AIRCRAFT, COMPUTERS, FEEDBACK, WORK, COHESION, PLAYBACK
AB (27) This study examines the efficacy of team members observing a computer
playback of their performance as a training tool in building effective
air traffic control (ATC) teams. Participants performed various
simulated radar-based ATC tasks under varying levels of aircraft
density. The results suggest that observing a computer playback of
one's team performance enabled team members to gain a system's

perspective of how their performance both affects and is affected by others. This perspective enabled team members to better coordinate their individual efforts, which thereby led to improvements in team cohesion and in the percentage of aircraft that reached their destination within the time constraints of a given scenario. However, as aircraft density increased, these improvements began to diminish. Additional specialized training may be necessary for ATC teams to improve their coordination during periods of high workload.

AN (1) AD-A382 823/XAG

FG (2) 010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Multidimensional Scaling Analysis of Controllers' Perceptions of Aircraft Performance Characteristics

DN (9) Final rept.

AU (10) Pfeleiderer, Elaine M.

RD (11) Jul 2000

PG (12) 34 Pages

RN (18) DOT/FAA/AM-00/24

XH-DOT

RC (20) Unclassified report

DE (23) *DECISION MAKING, *PERFORMANCE(HUMAN), *WORKLOAD, *AIR TRAFFIC CONTROLLERS

CONTROL SYSTEMS, AIRCRAFT, MODELS, EFFICIENCY, ESTIMATES, SCALING FACTOR, PERCEPTION

AB (27) Thirty full performance level (FPL) en route air traffic control specialists participated in an investigation of the salient features of aircraft mix, a proposed sector complexity factor. Controllers rated the "familiarity" (i.e., frequency of encounter) of 30 selected aircraft. They also provided weight class, engine number, engine type, cruising speed, climb, and descent rate estimates for each aircraft. A matrix of squared Euclidean distances derived from summary estimates (i.e., means of speed, climb, and descent) was used to construct a multidimensional scaling model of the aircraft. Multiple regression interpretation revealed that Dimension 1 was related to engine type, whereas Dimension 2 was associated with weight class. The position of elements in the derived stimulus space indicated that controllers may develop performance-related prototypes through the use of multiple cues derived from a number of sources. Results are presented as justification for further investigation into potential advantages of

providing enhanced prediction cues (e.g., engine type and weight class) from a single source, which may increase the efficiency of controller decision making and decrease perceived workload.

AN (1) AD-A385 316/XAG

FG (2) 010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Interfacility Boundary Adjustment

DN (9) Technical note

AU (10) Hadley, Jerry

Sollenberger, Randy

D'Arcy, Jean-Francois

Bassett, Philip

RD (11) Jul 2000

PG (12) 57 Pages

RS (14) DOT/FAA/CT-TN00/06

RN (18) XH-DOT/FAA

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *WORKLOAD, *AIR TRAFFIC CONTROLLERS, *SITUATIONAL

AWARENESS

SCENARIOS, AIR TRAFFIC CONTROL SYSTEMS, AIR SPACE, QUESTIONNAIRES

ID (25) RESECTORIZATION, BOUNDARY ADJUSTMENT

AB (27) This study examined the impact of inter-facility dynamic resectorization on Air Traffic Control Specialists' (ATCSs') performance, workload, communication, situational awareness, and control strategies. As a preliminary investigation, the scope of the study was limited to lateral boundary adjustments (in contrast to vertical adjustments) and specific traffic situations that should benefit the most from dynamic resectorization. Researchers selected a heavy traffic situation and shifting weather patterns as scenarios for this investigation. The approach was to pre-define regions of airspace that could be allocated to one Air Route Traffic Control Center (ARTCC) or the other depending upon the traffic situation. This approach represented a simple method of dynamic resectorization that could be implemented using current air traffic control (ATC) equipment. Twelve full performance level controllers participated in the study over a 6-week period. We evaluated their performance using objective and subjective measures. We assessed controller workload using the National Aeronautics and Space Administration Task Load Index and the Air Traffic Workload Input Technique. We measured ATCSs' situation

awareness using self-ratings on a numeric scale. In addition, controllers completed questionnaires after each scenario and at the end of the study. Results indicated that dynamic resectorization did not interfere with ATCS performance. Overall, there were very few separation losses in the study. Results indicated slightly fewer separation losses for dynamic resectorization in the heavy traffic scenarios, although this trend was not statistically reliable. Results indicated slightly lower NASA-TLX workload ratings in dynamic resectorization scenarios. However, dynamic resectorization did not reduce controller situation awareness. Ratings of situation awareness were higher when operating dynamic resectorization scenarios in both high density traffic and shifting weather situations.c

AN (1) AD-A385 540/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Team Processes in Airway Facilities Operations Control Centers
AU (10) Ahlstrom, Vicki
Koros, Anton
Helney, Michele
RD (11) Jul 2000
PG (12) 32 Pages
RS (14) ACT-500, DOT/FAA/CT-TN00/14
RN (18) XH-DOT
RC (20) Unclassified report
DE (23) *TEAMS(PERSONNEL), *TERMINAL FLIGHT FACILITIES, *AIR TRAFFIC CONTROL
TERMINAL AREAS
MAINTENANCE, ENVIRONMENTS, MANAGEMENT, PERFORMANCE(HUMAN), FACILITIES,
HUMAN FACTORS ENGINEERING, COMMUNICATION AND RADIO SYSTEMS
ID (25) NAS(NATIONAL AIRSPACE SYSTEM)
AB (27) In October 2000, the Airway Facilities organization plans to transition the National Airspace System (NAS) monitoring responsibilities to three regional Operations Control Centers (OCCs). Teams in these facilities will be different from those that currently exist in Maintenance Control Centers. A research team from the NAS Human Factors Branch, ACT-530, reviewed the implications of this new environment on potential OCC team performance issues. They conducted a two-pronged study. The first part examined team processes in current and future Airway Facilities (AF) environments. This involved assessing task analyses and flowcharts depicting workflow and communication processes for AF

maintenance work and conducting site interviews at key field sites. The second part of the study focused on identifying key factors with implications for team performance in the literature and applying them to the OCC environment. The study led to nine recommendations for facilitating the transition to OCCs.

AN (1) AD-A379 272/XAG
FG (2) 010300
061100
061500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL
INST
TI (6) Prevalence of Drugs and Alcohol in Fatal Civil Aviation Accidents Between 1994 and 1998.
DN (9) Final rept.
AU (10) Canfield, Dennis V.
Hordinsky, Jerry
Millett, David P
Endecott, Boyd
Smith', Dudley
RD (11) Jun 2000
PG (12) 9 Pages
RS (14) DOT/FAA/AM-00/21
RN (18) XH-DOT/FAA/AM
RC (20) Unclassified report
DE (23) *AVIATION ACCIDENTS, *DRUGS, *TOXICOLOGY, *ALCOHOLS, *BLOOD VOLUME,
*DRUG TESTING
DATA BASES, TRANSPORTATION, COMPUTERS, PILOTS, REPORTS, CONTRACTORS,
RESEARCH FACILITIES, SAFETY, CONTAINERS, CIVIL AVIATION, FLUIDS, LABORATORIES, CYANIDES, CARBON MONOXIDE, LIVER, URINE, AUTOPSY, LITIGATION, ALCOHOLISM, VITREOUS STATE, PATHOLOGISTS
ID (25) FORENSIC SCIENCE
AB (27) The use of drugs and alcohol in aviation is closely monitored by the FAA office of Aviation Medicine's (OAM's) Civil Aeromedical Institute (CAMI) through the toxicological analysis of specimens from pilots who have died in aviation accidents. This information on the use of drugs in aviation is helpful to the FAA in developing programs to reduce the usage of dangerous drugs and identify potentially incapacitating medical conditions that may cause an accident. Data collected from this research can be used to evaluate the effectiveness of the FAA drug

testing program. The toxicology reports prepared by the CAMI Forensic Toxicology Research Section are used by the FAA and the National Transportation Safety Board to determine the cause of aviation accidents. Specimens (blood, urine, liver, kidney, vitreous fluid, and other bodily specimens) were collected by pathologists near the accident and placed in evidence containers provided by CAMI. These samples were refrigerated and shipped by overnight air. Upon receipt, the specimens were inventoried and accessioned for the analysis of drugs, alcohol, carbon monoxide, and cyanide. All data collected by the laboratory were entered into a computer database for future analysis. The database was searched using a Microsoft Access TM program developed by a local contractor. The database was sorted based on the class of drug, controlled dangerous substance schedules I and II, controlled dangerous substance schedules III-V, prescription drugs, over-the-counter drugs, and alcohol. The Toxicology and Accident Research laboratory received specimens from 1683 pilots for postmortem toxicology analysis between 1994 to 1998. Controlled dangerous substances, CDS, (schedules I and II) were found in 89 of the pilots analysed. Controlled dangerous substances (schedules III - V) were found in 49 of the pilots tested. Prescription drugs were found in 240 of the pilots analyzed. Over-the-counter drugs were found in 301 of the pilots analysed. c

AN (1) AD-A377 878/XAG

**FG (2) 060500
061200**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

**TI (6) The Evaluation of In-Flight Medical Care Aboard Selected U.S. Air
Carriers: 1996 to 1997**

**AU (10) DeJohn, Charles A.
Veronneau, Stephen J.
Wolbrink, Alex M.
Larcher, Julie G.
Smith, David W.**

RD (11) May 2000

PG (12) 25 Pages

RS (14) DOT/FAA/AM-00/13

CT (15) DTFA02-97P53665

**RN (18) DOT/FAA/AM-00/13
XH-XD**

RC (20) Unclassified report

**NO (21) Prepared in collaboration with Oklahoma Univ., Norman and MedAire,
Inc., Phoenix, AZ**

**DE (23) *INFLIGHT, *MEDICAL SERVICES, *AVIATION MEDICINE
COMMERCIAL AVIATION, MEDICAL PERSONNEL, AIR TRANSPORTATION,
PASSENGERS**

**ID (25) IN FLIGHT MEDICAL CARE, IN FLIGHT MEDICAL KIT, MEDICAL FLIGHT
DIVERSIONS, IN FLIGHT FATALITIES, IN FLIGHT MEDICAL EMERGENCIES**

**AB (27) Medical care in-flight and the FAA-mandated medical kit have been
studied for many years. This study includes a detailed correlation
between in-flight medical care, patient response in-flight, and
post-flight follow-up, in an effort to evaluate in-flight medical care
delivery on US airlines and re-evaluate the FAA-mandated in-flight
medical kit. A survey of five US domestic air carriers from October 1,
1996, to September 30, 1997, showed 1132 in-flight medical incidents.
These airlines accounted for approximately 22% of scheduled US domestic
enplanements during the period. There was good overall agreement
between in-flight and post-flight diagnoses (70% of cases), and
passenger condition improved in a majority of cases (60%), suggesting
that in-flight diagnoses were generally accurate and treatment was
appropriate. Results indicated that bronchodilator inhalers, oral
antihistamines, and non-narcotic analgesics, all of which were obtained
from other passengers, were used frequently enough to support a
suggestion to include them in the medical kit.**

AN (1) AD-A379 226/XAG

**FG (2) 060400
060500
061100**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

**TI (6) DNA-Based Detecton of Ethanol-Producing Microorganisms in Postmortem
Blood and Tissues by Polymerase Chain Reaction.**

DN (9) Final rept.

**AU (10) Vu, Nicole T.
Chaturvedi, Arvind K.
Canfield, Dennis V.
Soper, John W.
Kupfer, Doris M.**

RD (11) May 2000

PG (12) 13 Pages

RS (14) DOT/FAA/AM-00/16

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report
DE (23) *TISSUES(BIOLOGY), *POLYMERIZATION, *SAMPLING, *CHAIN REACTIONS,
*BLOOD

CIRCULATION, *MICROORGANISMS, *INTOXICATION, *PROTEUS VULGARIS
PRODUCTION, BIOLOGY, DEOXYRIBONUCLEIC ACIDS, SEQUENCES,
ESCHERICHIA
COLI, PRIMERS, AVIATION ACCIDENTS, AUTOPSY, ALCOHOLS, LITIGATION,
ACCIDENTS

AB (27) Forensic investigation of fatal aircraft accidents usually includes the analysis of biological samples for ethanol to establish if alcohol intoxication is a factor in the accidents. The quantitative aspects of ethanol are often complicated by postmortem putrefactive changes, leading to microbial fermentation-mediated production of alcohol and its subsequent redistribution. Without establishing the ethanol origin (antemortem consumption or postmortem production), a precise interpretation of the alcohol analytical results remains a challenge. Therefore, a DNA-based assay was developed using the polymerase chain reaction and microbial DNA primers designed for identifying 3 commonly encountered ethanol-producing microorganisms- *Candida albicans*, *Proteus vulgaris*, and *Escherichia coli*. The present study focused on examining the applicability of the microbial DNA primers in establishing the existence of postmortem alcohol in samples. The results suggested that species-specific primers could be employed to identify ethanol-producing microorganisms in forensic samples without requiring bacterial cultivation. Continued studies are warranted to define additional primer sequences that are distinctive for ethanol-producing microorganisms.

AN (1) AD-A379 286/XAG

FG (2) 050800
050900

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Age and Attitudes in the Air Traffic Control Specialist Workforce: An
Initial Assessment

DN (9) Final rept.

AU (10) Thompson, Richard C.
Bailey, Lawrence L.

RD (11) May 2000

PG (12) 12 Pages

RS (14) DOT/FAA/AM-00/17

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *PSYCHOLOGICAL TESTS, *AIR TRAFFIC CONTROLLERS, *JOB
SATISFACTION, *AGE

DISTRIBUTION

ATTITUDES(PSYCHOLOGY), PERFORMANCE(HUMAN), AGING(PHYSIOLOGY),

BURNOUT,

PERCEPTION(PSYCHOLOGY), WORK ELEMENTS

AB (27) The present study examines the relationships between air traffic control specialist age, after covarying job tenure, with perceptions of job satisfaction, quality of work life, organizational commitment, and supervisory fairness. The presence of a relationship and the shape of the relationship are examined for four categories of controllers based on air traffic option or work setting (i.e., working in an enroute, flight service stations, Level 1 to 3 or level 4 or 5 terminal (towers and tracons)). The results suggest that there is a small linear relationship between age and attitudes. Similar patterns have been found in age research in other work settings. There are some differences in the shape of the age function based on air traffic option; these differences account for minimal variance. It may be fruitful to develop a more focused study where age is measured as a continuous variable instead of using age categories, which may have masked some differences found in past research. In addition, future research may consider examining the age and attitudes relationships using international controllers to determine if there are cultural differences in the relationships found.

AN (1) AD-A379 287/XAG

FG (2) 010600
200600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) A Unique Contact Lens-Related Airline Aircraft Accident

DN (9) Final rept.

AU (10) Nakagawara, Van B.
Veronneau, Stephen J.

RD (11) May 2000

PG (12) 9 Pages

RS (14) DOT/FAA/AM-00/18

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *CONTACT LENSES

COMMERCIAL AIRCRAFT, PILOTS, ADVERSE CONDITIONS, AVIATION ACCIDENTS,

VISUAL PERCEPTION, VISUAL ACUITY, CRASH LANDINGS

ID (25) MD-88 AIRCRAFT

AB (27) The use of contact lenses to satisfy the distant visual acuity requirements for obtaining a civil airman medical certificate has been permitted since 1976. According to the Federal Aviation Administration's "Guide for Aviation Medical Examiners," the use of monovision contact lenses is not considered acceptable for aviation duties. An aviation accident involving the use of monovision contact lenses will be reviewed. A case report is presented utilizing information from a National Transportation Safety Board (NTSB) aircraft accident report (NTSB/AAR-97/03) of a nonfatal scheduled airline accident. Past studies that examined the use of contact lenses in the aviation environment are reviewed. On October 19, 1996, a McDonnell Douglas MD-88 aircraft, Delta Airlines Flight 554, was substantially damaged in an undershoot approach while landing at LaGuardia Airport, Flushing, NY. Weather observations indicated a broken cloud layer at 800 feet, visibility between 1/2 and 1 mile in heavy rain and fog or mist, and easterly winds at 12 to 14 knots. The approach was over water to Runway 13 and the flight crew transitioned to visual references just above the decision height. As the airplane continued to descend, it struck an approach light structure and the end of the runway deck, shearing off the main landing gear and slid 2,700 feet down the runway. During an emergency evacuation, 3 passengers received minor injuries. The NTSB determined that the probable cause of this accident was the inability of the pilot to overcome his misperception of the airplane's position relative to the runway, due to the use of monovision contact lenses. The adverse effects of wearing contact lenses in the aviation environment are discussed. Research is recommended to better understand the effects of environmental conditions on monovision to validate the current policy on such corrections.

AN (1) AD-A380 287/XAG

FG (2) 171100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of the Airport Target Identification System (ATIDS) Beacon Multilateration System (93-CRDA-0052)

AU (10) Stevens, Anthony J.

RD (11) May 2000

PG (12) 62 Pages

RS (14) DOT/FAA/CT-TN98/4

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *TARGET RECOGNITION, *IDENTIFICATION SYSTEMS, *SURVEILLANCE, *BEACONS

AERIAL RECONNAISSANCE, POSITION(LOCATION), AIRCRAFT, MONITORING, AIRBORNE, ACCURACY, RADAR, TARGETS, TIME, SURFACES, FLIGHT, RECEIVERS,

TEST VEHICLES, INFLIGHT, TRANSMITTERS, PARALLEL ORIENTATION, CENTRAL

PROCESSING UNITS, AIRPORTS, RUNWAYS, TRANSPONDERS

ID (25) ATIDS(AIRPORT TARGET IDENTIFICATION SYSTEM), PRM(PARALLEL RUNWAY MONITOR)

AB (27) The Airport Target Identification System (ATIDS) is a new surveillance and identification system for locating Mode Select Beacon System (Mode S) equipped aircraft and vehicles. Its primary use is as a surface Beacon surveillance system to provide Flight Number Identification (ID) to the existing Airport Surface Detection Equipment Model 3 (ASDE-3) radar and Airport Movement Area Safety System (AMASS). The system is also capable of locating and identifying aircraft in flight or on the ground, which permits the use of the ATIDS system for Parallel Runway Monitor (PRM) and other airborne and surface surveillance applications. ATIDS is compatible with Mode S Automatic Dependent Surveillance (Mode S ADS-B), and can display the location and ID of properly equipped aircraft. ATIDS consists of three or more Receiver/Transmitters (R/Ts) encircling a predetermined coverage area. The system operates by receiving and time stamping the Mode S squitter from a target at three or more R/Ts; transmitting the squitter ID and time stamp to a central computer; measuring the Time Difference of Arrival (TDOA) of the squitter from each time stamp; and calculating the target's position by hyperbolic multilateration. The ATIDS system was evaluated using Federal Aviation Administration (FAA) test aircraft equipped with standard Mode S transponders. Surface accuracy performance was tested first at the Atlantic City International Airport (ACY) and then at the Atlanta Hartsfield International Airport (ATL), and was found to be adequate for the ASDE-3 labeling application, with a Root Mean Square (RMS) error of better than 3% feet. Airborne accuracy performance was evaluated at the ATL and found to be as accurate as the current Electronically Scanned (E-Scan) PRM for ranges greater than 7.24 miles, with an RMS error of better than 44 feet.

AN (1) AD-A382 688/XAG

FG (2) 040200

050200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Juneau Terrain Induced Turbulence Project: Non-FAR Part 121 User Needs Summary Report

DN (9) Technical note

AU (10) Benner, William

Carty, Thopmas

McGettigan, Starr

RD (11) May 2000

PG (12) 98 Pages

RS (14) DOT/FAA/CT-TN99/20

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *WEATHER, *INFORMATION SYSTEMS, *USER NEEDS

STATIONS, AUTOMATION, HAZARDS, ALASKA, WIND, TURBULENCE, TERRAIN, AERONAUTICS, FLIGHT, ADVERSE CONDITIONS, PATTERNS, EXTERNAL, INTERNATIONAL AIRPORTS, INLETS, ATMOSPHERES, AIR TRAFFIC CONTROL TERMINAL AREAS

ID (25) NCAR(NATIONAL CENTER FOR ATMOSPHERIC RESEARCH), WHIS(WIND HAZARD

INFORMATION SYSTEM), PAJN(JUNEAU INTERNATIONAL AIRPORT)

AB (27) Juneau International Airport (PAJN), Alaska, has a combination of extreme terrain features and adverse weather patterns that creates moderate to severe Terrain Induced Turbulence. As a result of this turbulence, the Federal Aviation Administration (FAA) has funded the National Center for Atmospheric Research (NCAR) to develop a Wind Hazard Information System (WHIS) for use by aviation users. This report describes the user needs assessment of the Juneau Terrain Induced Turbulence Project by ACT-320. Current practices were baselined and wind information needs were identified and defined for Non-FAR Part 121 Pilots, Automated Flight Service Station (AFSS) Specialists, Air Traffic Control Tower (ATCT) Specialists, and National Weather Service (NWS) Forecasters. Surveys and on-site interviews were used to gather information. In general, wind information used by the above mentioned users was not timely. The Gastineau Channel, Taku Inlet area, Outer Point, and PAJN were identified as being most impacted by winds. The importance of wind information varied across user groups.

AN (1) AD-A377 228/XAG

FG (2) 050900

120500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) The Effects of Previous Computer Experience on Air Traffic-Selection and Training (AT-SAT) Test Performance

DN (9) Final rept.

AU (10) Heil, Michael C.

Agnew, Brandy O.

RD (11) Apr 2000

PG (12) 16 Pages

RN (18) DOT/FAA/AM-00/12

XH-DOT

RC (20) Unclassified report

DE (23) *COMPUTER APPLICATIONS, *PERSONNEL SELECTION

TEST AND EVALUATION, ORGANIZATIONS, COMPUTERS, FORMATS, SAMPLING, KEYBOARDS, WORK STATIONS, AIR TRAFFIC CONTROLLERS, GAME THEORY

AB (27) Many tests that have traditionally been administered in paper-and-pencil format are now administered on a computer workstation. One disadvantage of computer administered tests, however, is the inadvertent measurement of extraneous abilities related to prior experience with a computer keyboard or mouse. Surprisingly, there has been little written in the scientific literature about the use of computers in the selection process by organizations. The current study examines the relationship between computer experience and test performance using a computerized selection test. Specifically, some computerized tests, often referred to as "page-turner" tests, present items that have been adapted to the computer and require the examinee to use the keyboard to select a response to the questions, which are presented one at a time. Another type of test is that which takes the form of dynamic virtual scenarios, work samples, or simulations. These may resemble a video or computer game and often require extensive use of both a mouse and a keyboard. The two main objectives of this study are: to determine if examinees with more computer experience perform better than examinees with less computer experience, and to determine if the relationship between computer experience and computerized test performance remains consistent, regardless of the type of test being presented in the computerized format. A total of 96 people between the ages of 18 and 30 participated in the study. Computer experience was measured using the Computer Use and Experience Questionnaire. The personnel selection test used was the Air Traffic-Selection and Training (AT-SAT) test. The relationship between computer experience and performance on the computerized selection test was investigated using Pearson's product-moment correlations and hierarchical multiple regression.

AN (1) AD-A382 860/XAG
FG (2) 040200
010600
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Juneau, Alaska, Wind Hazard Information System (WHIS): A Wintertime Assessment of Wind Sensors on Mt. Washington, New Hampshire
DN (9) Technical note
AU (10) Benner, William
Carty, Thomas
RD (11) Mar 2000
PG (12) 163 Pages
RS (14) DOT/FAA/CT-TN00/05
RN (18) XH-DOT/FAA/CT
RC (20) Unclassified report
DE (23) *METEOROLOGICAL DATA, *ANEMOMETERS, *WIND DIRECTION INDICATORS ALASKA, WIND, ICE FORMATION, OPERATIONAL EFFECTIVENESS, DATA ACQUISITION, INTERNATIONAL AIRPORTS, SITE INVESTIGATIONS, ARCTIC REGIONS, NEW HAMPSHIRE, ICE REPORTING
ID (25) MT WASHINGTON(NEW HAMPSHIRE), WHIS(WIND HAZARD INFORMATION SYSTEM),
AWR(AVIATION WEATHER RESEARCH)
AB (27) The Federal Aviation Administration (FAA) Weather Branch performed a 6-week wintertime assessment of wind sensors on Mt. Washington, NH, in 1999. The purpose of the effort was to perform a preliminary investigation of the severe weather performance capabilities of anemometers for use in the prototype Wind Hazard Information System (WHIS) at Juneau International Airport, AK. The test site was selected as it is subjected to extreme meteorological and climatic conditions equivalent to alpine and arctic zones characteristic to Juneau. The summit weather is severe and often experiences snow and icing conditions, and the buildup of rime ice on exposed surfaces is prevalent and often substantial. One ultrasonic and two mechanical wind sensors, all with internal heater capabilities, were studied. Other instruments included an ice detector, a relative humidity probe, and an Internet-capable video camera which was set up to continuously monitor temperature/weather and sensor conditions. Additional equipment consisted of a datalogger, a personal computer (PC), and various communications equipment located in a heated instrument shelter. About 37 days of data were remotely collected, downloaded, and analyzed. Figures are presented in this report to document and present the test bed setup, data collection, and analysis results. This effort was considered primarily a demonstration and shakedown effort, as a number of limitations were necessary and understood before the test bed

installation. The most severe limitation was problems encountered with the video camera. Despite the test bed difficulties, a sufficient amount of useful data was successfully analyzed to draw some conclusions on the adequacy of the test bed setup and the performance of the wind sensors. Results show several effects of snow and icing on wind sensor performance. One wind direction mechanical sensor failed early in the study due to heater-related problems.

AN (1) AD-A373 761/XAG
FG (2) 050100
060500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL
INST
TI (6) The FAA Health Awareness Program: Results of the 1998 Customer Service Assessment Survey
AU (10) Hilton, Thomas F.
Hart, I. S.
Farmer, William L.
Thompson, Jennifer J.
Behn, Lydia D
RD (11) Feb 2000
PG (12) 41 Pages
RN (18) DOT/FAA/AM-00/3
XH-DOT/FAA/AM
RC (20) Unclassified report
NO (21) Prepared in collaboration with University of Oklahoma Health Sciences Center, Oklahoma City, OK., and Environmental Protection Agency, Dallas, TX.
DE (23) *HEALTH SURVEYS, *HEALTH CARE MANAGEMENT
PHYSICAL FITNESS, HEALTH CARE FACILITIES
ID (25) *HEALTH AWARENESS PROGRAM, FEDERAL AVIATION ADMINISTRATION, WORKPLACE
WELLNESS
AB (27) This report presents the results of an agency-wide survey of employee health and wellness to determine workforce involvement in and satisfaction with the Federal Aviation Administration's Health Awareness Program (HAP). Surveys were received from 3,262 employees, representing a 45% response rate. Results indicated that about half the workforce had heard about HAP and that about half the workforce had participated in one or more HAP events (even if they did not realize that the event was HAP-sponsored). In terms of attendance, the most popular HAP information programs were health fairs, health awareness

lectures, and stress management awareness programs. Likewise, annual flu shots, cholesterol screening, blood chemistry screening, and blood pressure screening were the most popular HAP service programs. Analyses found a consistent relationship between HAP participation and employee exercise rates, involvement in healthy lifestyle behaviors, and overall wellness. These findings may have been influenced to some extent by respondent characteristics, which were somewhat disproportionately over age 45, female, and managerial. However, the respondents' backgrounds matched previous study results, indicating that Federal Aviation Administration respondents accurately represent the FLAP customer base -- that segment of the workforce most interested in health and wellness.

AN (1) AD-A375 445/XAG

FG (2) 010200

040200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Comparing Text and Graphics in Navigation Display Design

DN (9) Final rept

AU (10) Williams, Kevin W.

RD (11) Feb 2000

PG (12) 16 Pages

RS (14) DOT/FAA/AM-00/8

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PILOTS, *DISPLAY SYSTEMS, *AIR NAVIGATION, *FLIGHT SIMULATORS, *FRONTS(METEOROLOGY)

REQUIREMENTS, COMPARISON, MAPS, AIRPORTS

ID (25) *STORM FRONTS, *NAVIGATION DISPLAY DESIGN

AB (27) Thirty-six pilots were tested in a flight simulator on their ability to decide which of two airports was farther from a storm front, based on the manner in which information was presented on a navigational display. The results support the superiority of graphical over textual information display of nearest airport information. Pilots were significantly faster using the map display than using either the text-only display or the enhanced- text display. In addition, in contrast to an earlier study (Williams, 1999), pilots performed better using a north-up map than when using a track-up map. Discussion of the results focuses on recommendations for moving-map displays and the display requirements for support of the nearest-airport function within a navigational display.

AN (1) AD-A375 940/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Simulation of the North Atlantic Air Traffic and Separation Scenarios

AU (10) Gerhardt-Falk, Christine M.

Elasyed, E. A.

Livingston, Dale

Colamosca, Brian

RD (11) Feb 2000

PG (12) 180 Pages

RS (14) DOT/FAA/CT-TN00/04

RN (18) XH-FAA/DF

RC (20) Unclassified report

DE (23) *SIMULATION, *AIR TRAFFIC CONTROL SYSTEMS

SCENARIOS, QUICK REACTION, COST EFFECTIVENESS, VALIDATION,

LITERATURE

SURVEYS, SPECIFICATIONS, TASK FORCES, REDUCTION, NAVIGATION,

VERTICAL

ORIENTATION, AIR SPACE, FUEL CONSUMPTION, STANDARDS, SEPARATION, HORIZONTAL ORIENTATION, SAVINGS, NORTH ATLANTIC OCEAN, FREE FLIGHT

AB (27) This report presents a comprehensive study of the air traffic over the North Atlantic (NAT) Ocean. The main purpose of the study is to assess the fuel savings benefit of proposed changes to the separation standards in the NAT Minimum Navigation Performance Specification (MNPS) airspace. The report describes in detail the purpose of the study, literature survey of relevant work, requirements for the air traffic simulation, various separation standard scenarios, validation of the simulation model, analysis of the results, and conclusions. Using the separation standards from the 1996 NAT system as the baseline, this study presents analysis of four different separation scenarios: Reduced Vertical Separation Minima, Reduced Vertical and Longitudinal Separation Minima, Reduced Vertical and Horizontal Separation Minima and Free Flight. A fast time simulation model is used to investigate the effect of the separation scenarios on several measures of system performance such as fuel consumption and communication loadings. This study was completed in cooperation with the NAT implementation Management Group Cost Effectiveness (NICE) Task Force. The results presented in this report represent the findings of the NICE-USA task Group.

AN (1) AD-A382 052/XAG

**FG (2) 010200
010600**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Federal Aviation Administration National Aviation Research Plan

RD (11) Feb 2000

PG (12) 221 Pages

RN (18) XH-DOT

RC (20) Unclassified report

**DE (23) *CIVIL AVIATION, *RESEARCH MANAGEMENT, *AVIATION SAFETY
MANAGEMENT PLANNING AND CONTROL, AVIATION MEDICINE**

ID (25) NAS(NATIONAL AIRSPACE SYSTEM)

AB (27) Everyone takes a keen interest in what the FAA is doing-the Congress, industry, the media, the public ... that's because aviation touches our lives in so many ways. People rightly demand the safest, most reliable system possible. They expect the planes to be safe, their flights to be on time, and their luggage to be on the carousel. And they expect peak performance around the clock, day after day, year in, year out. The United States President, Congress, and the American public hold the Federal Aviation Administration responsible for providing a safe, secure, and efficient National Airspace System (NAS). Furthermore, they expect FAA actions and regulations to be effective in improving aviation safety and security while still mitigating the impacts of aircraft noise and emissions upon the environment. Better research and the implementation of effective new solutions increasingly hold the key to meeting the rising expectations of the American people and their Government. The significance of the FAA's research and development (R&D) will grow in proportion with the demands placed upon it. The FAA's R&D program finds and prepares to field technologies, systems, designs, and procedures that directly support the agency's principal operational and regulatory responsibilities: air traffic services, certification of aircraft and aviation personnel, operation and certification of airports, civil aviation security, and environmental standards for civil aviation. Safety remains the agency's top priority. While the FAA, NASA, and other R&D sources have introduced many new technologies and procedures over the past 20 years-and the accident rate has dropped dramatically as a result expectations are constantly being raised.

AN (1) AD-A373 794/XAG

FG (2) 050200

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL**

INST

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 Through 1999

DN (9) Final rept

**AU (10) Collins, William E.
Wayda, Michael E.**

RD (11) Jan 2000

PG (12) 84 Pages

**RN (18) DOT/FAA/AM-00/1
XH-DOT/FAA/AM**

RC (20) Unclassified report

**DE (23) *INDEXES, *AVIATION MEDICINE
REPORTS, MEDICAL RESEARCH**

AB (27) An index to Federal Aviation Administration Office of Aviation Medicine Reports (1964-1999) and Civil Aeromedical Institute Reports (1961-1963) is presented for those engaged in aviation medicine and related activities. The index lists all FAA aviation medicine reports published from 1961 through 1999: chronologically, alphabetically by author, and alphabetically by subject. A foreword describes aspects of the Civil Aeromedical Institute's 38 years of service, describes the index's sections, and explains how to obtain copies of published Office of Aviation Medicine technical reports.

AN (1) AD-A373 813/XAG

**FG (2) 050800
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

**TI (6) Measuring Air Traffic Controller Performance in a High-Fidelity
Simulation**

DN (9) Final rept.

AU (10) Manning, Carol A.

RD (11) Jan 2000

PG (12) 37 Pages

**RN (18) DOT/FAA/AM-00/2
XH-DOT/FAA/AM**

RC (20) Unclassified report

**DE (23) *PERFORMANCE(HUMAN), *AIR TRAFFIC CONTROLLERS
COMPUTERIZED SIMULATION, CONTROL SYSTEMS, JOB TRAINING**

AB (27) In the summer of 1997, the Air Traffic Selection and Training (AT-SAT) High Fidelity Simulation Study was conducted at the FAA Academy in Oklahoma City, OK. The purpose of the study was to test the performance of 107 operational en route controllers during 2 1/2 days of

simulations. The performance of these controllers during the high-fidelity simulations was compared with their performance on two medium-fidelity performance measures to assess the construct validity of the latter measures to serve as criteria against which to validate a set of selection tests. The reports included in this document describe the high-fidelity simulation exercise, the development of performance measures utilized during the exercise, and the interrelationships between the performance measures. The first report describes the development of a work sample approach to capturing air traffic controller performance, and establishes that high fidelity performance measures can adequately reflect the performance of the controller. The work sample was developed in an environment that simulated as nearly as possible the actual conditions existing in the controller's job, but was conducted in a "generic" airspace. Scenario development included the most important tasks from the task-based job analysis developed for the AT-SAT project. Sufficient time was provided for participating controllers to learn the airspace and procedures and demonstrate their knowledge through 1) a multiple choice test of airspace knowledge and 2) running 8 practice scenarios. Performance was measured by 1) an over-the-shoulder (OTS) rating scale, 2) counts of mistakes, 3) counts of actions that would be required to move aircraft from the sector at the end of the scenario, and 4) statistics derived from aircraft positions and controller/pilot data entries recorded for the simulation. The second report used measures collected during the high-fidelity simulation study to predict the overall OTS performance rating.

AN (1) AD-A375 375/XAG

FG (2) 010200
010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Situation Awareness in Air Traffic Control: Enhanced Displays for Advanced Operations

DN (9) Technical note

AU (10) Endsley, Mica
Sollenberger, Randy
Nakata, Akiko
Stein, Earl S.

RD (11) Jan 2000

PG (12) 55 Pages

RS (14) DOT/FAA/CT-TN00/01

RN (18) XH-DOT/FAA

RC (20) Unclassified report

DE (23) *AIR TRAFFIC

TEST AND EVALUATION, MANAGEMENT PLANNING AND CONTROL, AIRBORNE, AIR

TRAFFIC CONTROL SYSTEMS, DISPLAY SYSTEMS, RADAR EQUIPMENT, SEPARATION,

DATA LINKS, AWARENESS, FREE FLIGHT

ID (25) SITUATION AWARENESS, RADAR DISPLAY

AB (27) Future changes in the National Airspace System indicate a

self-separation operational concept. This study examined the Air

Traffic Control Specialist's ability to maintain situation awareness

and provide needed monitoring and separation functions under this

concept. The study also provides an empirical evaluation of the effects

of an enhanced display concept as a window on the existing air traffic

control radar display. This window furnished the targeted altitude or

heading of aircraft in a transitional state. This information

simulated that provided by a data link from the aircraft flight

management system in a future air traffic operation. The introduction

of the enhanced display appeared to have some utility in aiding

controllers in dealing with air traffic operating under

self-separation. The enhanced display resulted in improvements in some

air traffic control performance and situation awareness measures.

Results suggest that further improvements in the enhanced display may

better integrate it with the controller radar display. In addition,

researchers recommend methods for measuring controller situation

awareness in future air traffic control research.

AN (1) AD-A372 538/XAG

FG (2) 010200
060500

061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Prevalence of Chlorpheniramine in Aviation Accident Pilot Fatalities, 1991-1996.

AU (10) Soper, John W.

Chaturvedi, Arvind K.

Canfield, Dennis V.

RD (11) Dec 1999

PG (12) 8 Pages

RS (14) DOT/FAA/AM-99/29

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report
DE (23) *PILOTS, *AVIATION ACCIDENTS, *PHARMACOLOGY, *TOXICOLOGY, *BLOOD VOLUME, *ANTIHISTAMINICS
TEST AND EVALUATION, DATA BASES, DISTRIBUTION, COMPARTMENTS,
SAMPLING,
PATTERNS, CASUALTIES, THERAPY, MEAN, LIVER, DRUGS, DEATH, AVIATION
PERSONNEL, AUTOPSY, ACCIDENT INVESTIGATIONS

ID (25) *CHLORPHENIRAMINE

AB (27) Chlorpheniramine, a popular nonprescription antihistaminic, is known to cause drowsiness. This side effect has a potential to impair performance and to be a factor in accidents. Therefore, this study was conducted to establish the prevalence of this drug in pilot fatalities of aviation accidents. During fatal aircraft accident investigations, postmortem samples collected from the pilots at autopsy are submitted to the Civil Aeromedical Institute for toxicological evaluation, and the findings are maintained in a database. Those data were examined for the presence of chlorpheniramine in the fatalities, which occurred during a 6-year (1991-1996) period. It was determined that there were 47 (2.2%) accidents involving chlorpheniramine. In 16 of these cases, only chlorpheniramine was found, with the mean concentrations of 109 ng/ml (n = 4) in blood and 1412 ng/g (n = 12) in liver. Other drugs were also present in the remaining 31 cases, wherein the mean chlorpheniramine concentrations were 93 ng/ml (n = 18) in blood and 747 ng/g (n = 12) in liver. Ninety-five percent of all the quantitative blood values were at or above the therapeutic (10 ng/ml) level, giving a 100 ng/ml (n = 21) blood mean level. The drug's mean concentration in the liver of all the cases was 1080 ng/g (n = 24). The average chlorpheniramine blood value was approximately 10 times higher than its therapeutic value. The presence of other drugs did not appear to significantly alter the blood level of chlorpheniramine, but no such correlation could be established with the hepatic value. The approximate 10-fold increase in the liver concentration, as compared with the blood value, was consistent with the general trend of the distribution of drugs in the hepatic compartment. However, the contribution of postmortem redistribution of the drug to alter its concentration cannot be entirely ruled out.

AN (1) AD-A372 988/XAG

FG (2) 010600
050900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Air Traffic Control Specialist Visual Scanning II: Task Load, Visual

Noise, and Intrusions Into Controlled Airspace

DN (9) Technical note

AU (10) Willems, Ben
Allen, Robert C.
Stein, Earl S.

RD (11) Dec 1999

PG (12) 137 Pages

RS (14) DOT/FAA/CT-TN99/23

RN (18) DOT/FAA/AAR-100
XH-DOT/FAA/AAR

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *AIR TRAFFIC CONTROLLERS
COMPUTERIZED SIMULATION, COGNITION, OPTICAL DATA, TARGETS, HUMAN
FACTORS ENGINEERING, DISPLAY SYSTEMS, GROUND CONTROLLED

APPROACH RADAR,

ERROR ANALYSIS, AIR SPACE, RADAR EQUIPMENT, NOISE, WORKLOAD,
INTRUSION,

INFORMATION PROCESSING, OVERFLIGHT, EYE MOVEMENTS

ID (25) VISUAL NOISE, *VISUAL SCANNING, FIXATIONS, SACCADES, BLINKS, PUPILS

AB (27) The Federal Aviation Administration (FAA) started an Air Traffic Control Specialist (ATCS) information-scanning program a number of years ago. The goal is to learn about how controllers use information displays and develop techniques for reducing air traffic-related errors. This report describes a research project conducted at the Research Development and Human Factors Laboratory of the FAA William J. Hughes Technical Center. Volunteer controllers participated in a real-time, air traffic control simulation of airspace modeled after their Terminal Radar Approach Control (TRACON) facility. ATCSs worked two different levels of simulated traffic. Some scenarios contained incursions into their Class C airspace, and overflights provided visual noise. Results indicated that the ATCSs' workload increased with higher traffic loads. However, visual noise had more impact on their perceived workload when things were slower and not when they were already busy. An eye tracker recorded eye movements. The visual scanning data included fixations, saccades, blinks, and pupil information. Increased traffic loads decreased the number of fixations on the radarscope. The increase in task load seemed to divert the ATCSs' attention to areas other than the scope, most specifically the keyboard, suggesting they were spending more time updating flight plans and less time scanning the scope. Controllers developed scanning patterns that focused on the areas of highest traffic density. This may be why they identified airspace intrusions late or not at all in some specific cases. Such lapses suggest that intrusion targets must be emphasized with color, blinking, or some other means to draw the controllers attention from

established patterns. This may increase airspace safety.

AN (1) AD-A370 816/XAG

**FG (2) 010400
230200**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

TI (6) GPS User-Interface Design Problems: II

DN (9) Final rept.

AU (10) Williams, Kevin W.

RD (11) Nov 1999

PG (12) 11 Pages

RS (14) DOT/FAA/AM-99/26

RN (18) XH-DOT

RC (20) Unclassified report

**DE (23) *FLIGHT CONTROL SYSTEMS, *HUMAN FACTORS ENGINEERING, *GLOBAL
POSITIONING SYSTEM, *GRAPHICAL USER INTERFACE
AVIONICS, COCKPITS, NAVIGATION SATELLITES, USER NEEDS, AIRCRAFT
DESIGN**

AB (27) This paper is the second of two of a review of human factors problems associated with the user interface design of a set of Global Positioning System (GPS) receivers, certified for use in aircraft for instrument non-precision approaches. Both papers focus on design problems associated with the interfaces and specific inconsistencies across the set of interfaces that could cause confusion or errors during operation. Some specific problems addressed involve the placement of units in the cockpit; the use and design of moving map displays; and problems associated with changes in course direction indicator sensitivity. Recommendations for solving some of the problems are provided, as well as suggestions to the FAA, GPS manufacturers, and pilots regarding the future development and use of these products.

AN (1) AD-A370 873/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE
ADMINISTRATOR
FOR NAS DEVELOPMENT**

TI (6) FAA Helicopter/Vertiport Lighting Conference - Proceedings

DN (9) Final rept

AU (10) Smith, Robert D.

RD (11) Nov 1999

PG (12) 271 Pages

RS (14) DOT/FAA/ND-99/1

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *LIGHT, *HELIPORTS

**HELICOPTERS, VERTICAL ORIENTATION, VERTICAL TAKEOFF AIRCRAFT,
INSTRUMENT FLIGHT**

ID (25) *VERTIPORT, TILTROTOR

AB (27) As the vertical flight industry moves into instrument flight rules (IFR) operations at heliports, it has become apparent to both FAA and the users that there is research and development to be done on heliport lighting. With the civil tiltrotor now in production, there is also work to be done on vertiport lighting. The lighting industry has developed a variety of technologies that appear promising as candidate heliport and vertiport lighting components. Still, there are many questions still to be answered. For example: Which technologies can best provide the different visual cues needed by the pilot? What lighting configurations are most effective in various scenarios? To what criteria should some of these lights be certificated? Some of these and other questions will be answered by the marketplace. Other questions should be addressed via research and development. In looking at the heliport lighting research done by the FAA over the last decade and the resulting advisory circular guidance, it is clear that there are many more questions than answers. To answer these questions would require much more in the way of resources than what is likely to be available in the near future. With this in mind, the FAA sought the advice of the aviation community on how we could best proceed. A two-day technical conference was the mechanism used. This report documents the proceedings of this conference.

AN (1) AD-A371 588/XAG

**FG (2) 050800
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

TI (6) Organizational Change: Effects of Fairness Perceptions on Cynicism.

DN (9) Final rept.

AU (10) Thompson, Richard C.

Bailey, Lawrence L.

Joseph, Kurt M.

Worley, Jody A.

Williams, Clara A.

RD (11) Nov 1999
PG (12) 12 Pages
RN (18) DOT/FAA/AM-99/27
XH-DOT
RC (20) Unclassified report
DE (23) *ATTITUDES(PSYCHOLOGY), *JOB SATISFACTION
ORGANIZATIONS, PREDICTIONS, DISTRIBUTION, SUPERVISORS, PERSONNEL,
WORK,
OVERLOAD

ID (25) TRUST
AB (27) Organizational activities perceived by a workforce as being unfair are believed by organizational researchers to contribute to workforce cynicism. The present study examines this previously untested proposition. The results from this study suggest that fairness perceptions predict cynicism, but the strongest predictor of cynicism is organizational trust. These conclusions were derived by examining the relationship between five measures of fairness (fairness of awards, award system, work distribution, work level, and supervisors), four workplace characteristic variables (episodic stress, role overload, organizational trust, and job satisfaction), and two measures of cynicism (cynicism about change and coworker cynicism). The results show that the strongest predictor of both measures of cynicism is organizational trust. In addition, the fairness perceptions play a limited role in predicting perceptions of cynicism. Future research should better define the conceptual and empirical distinctions between workforce cynicism, organizational trust, and workplace fairness.

AN (1) AD-A372 688/XAG
FG (2) 010600
210500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
RESEARCH
TI (6) Engine Debris Penetration Testing
DN (9) Final rept.
RD (11) Nov 1999
PG (12) 154 Pages
RS (14) DOT/FAA/AR-99/19
RN (18) XH-DOT/FAA/AR
RC (20) Unclassified report
DE (23) *DAMAGE ASSESSMENT, *GAS TURBINES, *AVIATION ACCIDENTS
DEBRIS, AIRCRAFT ENGINES, IMPACT TESTS, PENETRATION, BALLISTICS,
ACCIDENT INVESTIGATIONS

ID (25) ALUMINUM 2024-T3, ENGINE DEBRIS
AB (27) The damaging effects from an uncontained aircraft turbine engine failure can be catastrophic. As a result, the Federal Aviation Administration (FAA) has commissioned a program to mitigate the damaging effects of such an event. The Uncontained Engine Debris Mitigation Program will involve both industry and government to determine possible engineering solutions to this problem. As part of this program, the Naval Air Warfare Center Weapons Division (NAWCWPNS) has been tasked to evaluate ballistic damage analysis tools and techniques that are currently in use by the defense community. The intent is to determine their applicability in predicting the damaging effects from an uncontained engine failure. This report documents testing that was conducted and the evaluation of several empirical penetration equations under the circumstances present during engine failure events. The data generated under this effort showed that variations in the velocity, orientation, and shape of the debris results in differing failure modes of the targets. When plugging failures of the targets occur, the results of the defense equations are quite good. When petaling failures occur the prediction accuracy was degraded. This resulted in the development of an FAA Energy Equation through numerical curvefitting of the test data for 2024 T3 aluminum targets. Additional testing is planned to evaluate the penetration equations performance with real aircraft structure and varying obliquity angles at impact under phase II testing.

AN (1) AD-A370 417/XAG
FG (2) 050600
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) Controller Teamwork Evaluation and Assessment Methodology: A Scenario
Calibration Study
DN (9) Final rept.
AU (10) Bailey, Larry L.
Broach, Dana M.
Thompson, Richard C.
Enos, Robert J.
RD (11) Oct 1999
PG (12) 21 Pages
RN (18) DOT/FAA/AM-99/24
XH-DOT/FAA/AM
RC (20) Unclassified report
DE (23) *TRAINING DEVICES, *AIR TRAFFIC CONTROLLERS

SCENARIOS, TRAINING, TEAMS(PERSONNEL), AIR TRAFFIC CONTROL SYSTEMS,

ERRORS, SAFETY, AIR TRAFFIC

AB (27) A low cost air traffic control (ATC) multi-sector training platform was developed to simulate radar-based air traffic control tasks. The purpose of the training device was to provide a vehicle for delivering ATC training on teamwork. However, before training could be delivered it was first necessary to develop training scenarios that would place participants under a specific amount of work. The results of the scenario calibration study reported in this paper suggest that the three scenarios can be viewed as representing low, medium, and high workload conditions based on the performance of 31 four-person teams. Statistically significant performance differences were observed across all three scenarios based on the percentage of aircraft that reached their destination within the allotted time, the amount of aircraft delay, the number of safety errors, and participants' perceptions of their workload.

AN (1) AD-A370 769/XAG

FG (2) 050100

050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Organizational Communication and Trust in the Context of Technology Change

AU (10) Worley, Jody A.

Bailey, Lawrence L.

Thompson, Richard C.

Joseph, Kurt M.

Williams, Clara A.

RD (11) Oct 1999

PG (12) 12 Pages

RN (18) DOT/FAA/AM-99/25

XH-XD

RC (20) Unclassified report

DE (23) *LEADERSHIP, *ORGANIZATION THEORY, *SUPERVISION, *VERBAL BEHAVIOR

MANAGEMENT PLANNING AND CONTROL, ATTITUDES(PSYCHOLOGY),

PERFORMANCE(HUMAN), OPERATIONAL EFFECTIVENESS, HYPOTHESES,

PERCEPTION,

OFFICE PERSONNEL, HUMAN RELATIONS

AB (27) Open communication and organizational trust are important factors in the context of organizational technology change. Although previous research has addressed the relationship between technology change and open communication, and issues concerning organizational trust and open communication, few investigations adequately address the interplay between all factors simultaneously. The relationship between perceptions of organizational trust and communication, as well as other organizational variables, were examined within the context of significant technology change in a division of a large federal agency. Perceptions of open communication during technology change were predicted from the organizational variables. The results show that organizational trust, supervisory leadership style, workgroup cohesion, and acceptance of change were significant predictors for open communication. Results support the contention that, if issues and concerns related to open communication and organizational trust are neglected, particularly in times of change, they may undermine efforts that would otherwise facilitate a smooth transition. Identifying the importance of these relationships for the division allows management to concentrate on areas most likely to enhance the transition process as the organization undergoes technology change.

AN (1) AD-A370 878/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Prospects for the Acquisition of Icing Data from Operational Aircraft

DN (9) Final rept.

AU (10) Riley, James T.

Lindholm, Tenny

Politovich, Marcia

Brown, Barbara

Strapp, Walter

RD (11) Sep 1999

PG (12) 13 Pages

RS (14) DOT/FAA/AR-99/66

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Prepared in cooperation with William J. Hughes Technical Center,

Atlantic City, NJ, National Center for Atmospheric Research, Boulder,

CO and Atmospheric Environment Service, Toronto, Canada

DE (23) *COMMERCIAL AIRCRAFT, *METEOROLOGICAL DATA, *ICE FORECASTING,

*DEICING

SYSTEMS

DATA BASES, CANADA, ICE FORMATION, MOISTURE CONTENT, INFLIGHT, CLIMATOLOGY, DOWNLINKS, ICE PREVENTION

ID (25) DROPLET-SIZING PROBE, *LWC(LIQUID WATER CONTENT), AIRCRAFT INCING

AB (27) Task 131 of the FAA In-Flight Aircraft Icing Plan addresses the possibility of acquiring icing data from operational aircraft. The FAA Working Group 131 investigated two possible approaches for this task. The "icing sensor/downlink approach," which would downlink icing data from existing or enhanced icing sensors on operational aircraft, would benefit from similar successful efforts in downlinking and utilizing other kinds of meteorological data (temperature, winds) from commercial carriers. More recent programs are working toward the downlinking of humidity and in situ turbulence measurements. The downlinked icing data would have multiple uses. It potentially could be uplinked in near real time to other aircraft, enhancing safety by providing frequent and objective icing information as well as accurate location of the icing conditions to pilots of other aircraft. The data could be ingested into operational numerical weather forecast models, ingested into icing diagnosis and forecasting algorithms, and archived for improved, objective assessment of forecast tools and for characterization of the atmospheric icing environment. The "compact integrated icing instrumentation package approach" would entail the installation of a processor and size-reduced liquid water content (LWC) and droplet sizing probes on at least one operational aircraft. The compact integrated icing instrumentation package approach seems more likely to be tried first with a government operational aircraft, either in the U.S. or Canada whose mission requires frequent operation in icing conditions. If instrumented with a compact integrated version of instrumentation currently carried by icing research aircraft, such an aircraft could provide a valuable and voluminous data set for forecast assessment and atmospheric characterization.

AN (1) AD-A369 584/XAG

FG (2) 170703

050200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Implications of Reduced Involvement in En Route Air Traffic Control

DN (9) Technical note

AU (10) Willems, Ben

Truitt, Todd R.

RD (11) Aug 1999

PG (12) 157 Pages

RS (14) DOT/FAA/CT-TN99/22

RN (18) XH-DOT/FAA

RC (20) Unclassified report

DE (23) *MANAGEMENT PLANNING AND CONTROL, *AIR TRAFFIC CONTROL SYSTEMS,

*COMMERCIAL AVIATION

SCANNING, FLIGHT CONTROL SYSTEMS, PASSIVE SYSTEMS, WORKLOAD, QUESTIONNAIRES, AWARENESS, EYE MOVEMENTS

AB (27) The expansion of the National Route Program will allow airlines to be more flexible in filing and amending flight plans. This may result in a change in the role of the air traffic control specialist from direct control to a position with more monitoring responsibilities. This change may result in a reduction of situation awareness, memory and vigilance. This experiment investigated the effect of moving a controller from the current active control to a monitoring position. It examined the effect of the change in involvement and task load by measuring eye movements, workload, situation awareness, system performance, controller performance ratings, organization of information in memory, and responses to questionnaires. Controllers received training on a generic en route airspace, the Genera High sector, during four practice simulations of 40 minutes each. They then worked four 30-minute experimental scenarios. Results indicated that controllers showed a less structured scanning pattern under high task load and active involvement conditions. Measured workload correlated well with traffic volume. Under monitoring conditions, controllers perceived lower workload. Controller situation awareness was lower under monitoring conditions and decreased further with an increase in task load. Controllers perceived that their situation awareness did not change between active control and passive monitoring. The decrease in situation awareness warrants careful examination of the need for training and assistance of controllers for situations where they no longer function in the current active control position.

AN (1) AD-A367 981/XAG

FG (2) 131200

201300

CA (5) FEDERAL AVIATION ADMINISTRATION ATLANTIC CITY NJ AIRPORT AND AIRCRAFT

SAFETY RESEARCH AND DEVELOPMENT

TI (6) Solid-State Thermochemistry of Flaming Combustion

AU (10) Lyon, Richard E.

RD (11) Jul 1999

PG (12) 61 Pages

RN (18) DOT/FAA/AR-99/56
 XH-DOT
 RC (20) Unclassified report
 DE (23) *POLYMERS, *THERMOCHEMISTRY, *FIRE RESISTANT MATERIALS
 COMBUSTION, THERMAL DEGRADATION, PYROLYSIS, FLAMMABILITY,
 CHARRING
 AB (27) The thermal and chemical processes which occur in the solid state
 during flaming combustion are examined. A phenomenological model of
 fuel generation provides the relationships between macroscopic
 flammability parameters and polymer chemical structure and shows how
 the coupling of thermal diffusion and chemical kinetics occurs
 naturally in the pyrolysis zone. Fire behavior and flammability of
 solid polymers are predicted using the ignition temperature, heat of
 combustion, heat of gasification, and char yield calculated from the
 chemical structure; and the results are compared to experimental
 values. The objective of this work is to develop a consistent,
 solid-state physical chemistry of flaming combustion which bridges the
 gap between fire and material sciences to help guide the discovery of
 new, more fire-resistant polymers.

AN (1) AD-A364 891/XAG
 FG (2) 230200
 CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
 AEROMEDICAL
 INST
 TI (6) **The Influence of Ergonomic Interventions on Employee Stress and
 Physical Symptoms.**
 DN (9) Final rept.
 AU (10) Joseph, Kurt M.
 Thompson, Richard C.
 Bailey, Larry L.
 William, Clara A.
 Worley, Jody A.
 RD (11) Jun 1999
 PG (12) 9 Pages
 RN (18) DOT/FAA/AM-99/17
 XH-DOT
 RC (20) Unclassified report
 DE (23) *STRESS(PHYSIOLOGY), *ERGONOMICS, *MUSCULOSKELETAL DISEASES
 ENVIRONMENTS, RISK, SIGNS AND SYMPTOMS, WOUNDS AND INJURIES,
 WORK,
 SOCIAL PSYCHOLOGY
 AB (27) A recent report by the GAO (1997) indicates that private sector

employers spend as much as \$20 billion annually for employee injuries
 and illnesses due to musculoskeletal disorders (MSDs). While the
 etiologic mechanisms are poorly understood, there is increasing
 evidence that psychosocial risk factors related to the job and work
 environment play a role in the development of work-related MSDs. A
 longitudinal study was completed to determine the influence of six
 psychosocial factors and two cost-effective ergonomics interventions on
 physical discomfort and stress scores reported by employees within a
 Federal Aviation Administration organization. The results of the study
 revealed that stress scores decreased significantly across time.
 However, physical symptom scores did not change across time, nor were
 they affected by the ergonomic interventions. Two psychosocial factors
 provided significant and reliable adjustments to stress and physical
 discomfort scores.

AN (1) AD-A364 893/XAG
 FG (2) 050900
 060400
 CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
 AVIATION
 MEDICINE
 TI (6) **An Investigation of the Relationship Between Chronological Age and
 Indicators of Job Performance for Incumbent Air Traffic Control
 Specialists.**
 DN (9) Final rept.
 AU (10) Heil, Michael C.
 RD (11) Jun 1999
 PG (12) 17 Pages
 RS (14) DOT/FAA/AM-99/18
 RN (18) XH-DOT
 RC (20) Unclassified report
 DE (23) *TRAINING, *PERFORMANCE(HUMAN), *AGING(PHYSIOLOGY), *AIR TRAFFIC
 CONTROLLERS
 REQUIREMENTS, MEASUREMENT, JOBS, SKILLS, VALIDATION, COMPUTERS,
 COGNITION, REGRESSION ANALYSIS, RATINGS, PERSONNEL, WORK,
 INDICATORS,
 RETIREMENT(PERSONNEL), SCORING
 ID (25) ATCS(AIR TRAFFIC CONTROL SPECIALISTS)
 AB (27) Over the last few decades, researchers have consistently found a
 negative relationship between the age of Air Traffic Control
 Specialists (ATCSs) and both training success and ratings of job
 performance (Trites, 1961; Trites & Cobb, 1962; Cobb, 1967; VanDeventer
 & Baxter, 1984). As more ATCSs reach retirement age and the FAA

prepares for renewed hiring efforts, there is a need to once again explore this issue. According to Schroeder, Broach, and Farmer (1997), the potential effects of aging on cognitive functioning, and the consequences of these changes on job performance and future training requirements, are important considerations associated with the aging of the ATCS workforce. The present study revisited the issue of ATCS age and performance using incumbent controllers and newly developed measures of job performance. A recent Air Traffic-Selection and Training (AT-SAT) concurrent validation study afforded an opportunity to investigate the relationship between age and performance using criterion measures that did not exist for previous studies. One of these measures, a computer based performance measure (CBPM), served as a measure of the technical skills necessary to effectively and efficiently separate traffic on the job. Assessment ratings of job performance by peers and supervisors also served as a criterion measure for the current study. Results of ANOVA and regression analysis revealed that, on average, older ATCSs received lower scores on measures of job performance.

- AN (1) AD-A365 569/XAG
- FG (2) 050900
131200
- CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST
- TI (6) Follow-up Assessment of The Federal Aviation Administration's Logistics Center Safety Climate.
- AU (10) Behn, L. D.
Thompson, R. C.
Hilton, T. F.
- RD (11) Jun 1999
- PG (12) 25 Pages
- RN (18) DOT/FAA/AM-99/19
XH-XD
- RC (20) Unclassified report
- DE (23) *PERSONNEL MANAGEMENT, *STANDARDIZATION, *AWARENESS, *PUBLIC SAFETY,
*ROLES(BEHAVIOR)
HAZARDS, SURVEYS, ENVIRONMENTAL PROTECTION, PROGRAMMED INSTRUCTION,
PERCEPTION, SUPERVISION
- AB (27) This report details FAA Logistics Center employee safety perceptions following the implementation of a safety awareness program. Safety

perceptions were baselined in 1992 and a follow-up assessment was conducted in 1995. The purpose of the follow-up survey was to: (1) assess differences in perceptions of safety that may have resulted from changes made in the safety program since the 1992 assessment; and (2) determine the managerial and organizational factors that may have impacted those safety perceptions. The present survey was administered to 329 employees (supervisors and nonsupervisors) during a mandatory monthly safety meeting. The results show that specific actions intended to demonstrate the importance of safety can lead to higher levels of perceived management and supervisory support for safety. Such practices can also lead to higher levels of perceived safety in the workplace. These practices, however, do not appear to influence perceptions of organizational politics, supervisory fairness, or coworker support for safety.

- AN (1) AD-A365 692/XAG
- FG (2) 010100
010200
- CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
- TI (6) Video Landing Parameter Survey-Washington National Airport
- DN (9) Final rept.
- AU (10) Barnes, Terence
DeFiore, Thomas
Micklos, Richard
- RD (11) Jun 1999
- PG (12) 42 Pages
- RS (14) DOT/FAA/AR-97/106
- RN (18) DOT/FAA/AR-97/106
XH-XD
- RC (20) Unclassified report
- DE (23) *AIRCRAFT LANDINGS
ANGLES, YAW, WEATHER, THRESHOLD EFFECTS, SURVEYS, WEIGHT, VIDEO SIGNALS, AIRPORTS, RUNWAYS, DISTRICT OF COLUMBIA, TELEVISION CAMERAS,
APPROACH, AIRCRAFT DESIGN
- ID (25) *LANDING PARAMETERS, SINK RATES, APPROACH VELOCITY, WASHINGTON NATIONAL AIRPORT(DISTRICT OF COLUMBIA)
- AB (27) The Federal Aviation Administration William J. Hughes Technical Center is conducting a series of video landing parameter surveys at high-capacity commercial airports to acquire a better understanding of typical contact conditions for a wide variety of aircraft and airports

as they relate to current aircraft design criteria and practices. This was the second in a ongoing series of parameter landing surveys and was conducted at Washington National Airport in June 1995. Four video cameras were temporarily installed along the east side of runway 36. Video images of 532 transport, (525 narrow-body jets and 7 commuter jets) were captured, analyzed, and the results presented herein. Landing parameters presented include sink rate; approach speed; touchdown pitch, roll, and yaw angles; off-center distance; and the touchdown distance from the runway threshold measured along the runway center line. Wind and weather conditions were also recorded and landing weights were available for most landings. Since this program is only concerned with the overall statistical usage information, all data were processed and are presented without regard to the airline or the flight number.

AN (1) AD-A365 761/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Longitudinal Acceleration Tests of Overhead Luggage Bins and Auxiliary Fuel Tank in a Transport Airplane Airframe Section.

DN (9) Final rept. Nov 97-Jan 98

**AU (10) McGuire, Robert
Macy, Tim**

RD (11) Jun 1999

PG (12) 345 Pages

CT (15) DTFA03-95-R-00028

**RN (18) DOT/FAA/AR-99/4
XH-DOT**

RC (20) Unclassified report

DE (23) *AUXILIARY, *AIRFRAMES, *TRANSPORT AIRCRAFT, *AIRCRAFT CABINS TEST AND EVALUATION, VELOCITY, OUTPUT, SIMULATION, PEAK VALUES, TRANSPORTATION, ACCELEROMETERS, ACCELERATION, FLOORS, IMPACT

TESTS,

PILOTS, TEST EQUIPMENT, RESEARCH FACILITIES, STRUCTURAL RESPONSE, FUSELAGES, TRANSPORT, STRAIN GAGES, FUEL TANKS, SIDES, PASSENGERS, ACCELERATED TESTING, CRASHES, POTENTIOMETERS

AB (27) This report contains the description and test results of overhead stowage bin calibrations and longitudinal impact testing of a 10-foot transport airframe section conducted at the Transportation Research Center Inc. (TRC) . The purpose of the tests was to measure the structural responses and interaction between the fuselage, overhead stowage bins, and auxiliary fuel tank under simulated, potentially

survivable, crash conditions. A 10-foot section from a Boeing 737, Model 200 was used as the test section. The overhead stowage bin connection supports were instrumented with strain gages and calibrated. Two types of overhead storage bins were installed in the transport airframe and pulled in a longitudinal direction at various known loads to monitor and record the strain gage outputs. The transport airframe was longitudinally impact tested using TRC's 24-inch shock tester. Peak accelerations and corresponding velocity changes of 6.1 g (23.2 ft/sec), 8.2 g (32.2 ft/sec), and 14.2 g (41.7 ft/sec) were recorded. The transport airframe section was configured with a 120-inch overhead stowage bin (Bin A) attached to the left/pilot side, a 60-inch overhead stowage bin (Bin B) attached to the right/copilot side, and a 500-gallon auxiliary fuel tank attached underneath the airframe's passenger floor section. The test articles were equipped with accelerometers, strain gages, and potentiometers totaling approximately 90 channels of data per simulated crash test.

AN (1) AD-A367 892/XAG

**FG (2) 170703
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Traffic Control System Baseline Methodology Guide.

DN (9) Technical rept.

**AU (10) Allendorefer, Kenneth R.
Galushka, Joseph**

RD (11) Jun 1999

PG (12) 88 Pages

RS (14) DOT/FAA/CT-TN99/15

RN (18) XH-DOT/FAA

RC (20) Unclassified report

DE (23) *METHODODOLOGY, *MANAGEMENT INFORMATION SYSTEMS, *AIR TRAFFIC CONTROL

SYSTEMS, *BASE LINES

LESSONS LEARNED, ACQUISITION, TEST METHODS, OPERATIONAL EFFECTIVENESS,

FEASIBILITY STUDIES, DATA ACQUISITION, QUESTIONNAIRES

AB (27) The Air Traffic Control System Baseline Methodology Guide serves as a reference in the design and conduct of baseline studies. Engineering research psychologists are the intended audience for the Methodology Guide, which focuses primarily on techniques for studying the interaction between ATC systems and the controllers who use them. The Methodology Guide provides the following information: (a) descriptions

of and references to past baselines that have successfully used the methodology, (b) detailed descriptions of the baseline operational constructs and corresponding objective and subjective measures, (c) a description of the overall baseline methodology, (d) other recommendations and lessons learned regarding the successful conduct of system baselines, and (e) a discussion of the role of system baselines in the ATC system acquisition process.

AN (1) AD-A368 140/XAG

FG (2) 010400

230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Human Error Mitigation in Future Operations Control Centers

DN (9) Technical note

AU (10) Ahlstrom, Vicki

MacMillan, Jean

Tenney, Yvette J.

Pew, Richard W.

Cranston, Robert L.

RD (11) Jun 1999

PG (12) 46 Pages

RS (14) DOT/FAA/CT-TN99/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *HUMAN FACTORS ENGINEERING, *AIR CONTROL CENTERS, *AIR TRAFFIC CONTROL

TERMINAL AREAS

PERFORMANCE(HUMAN), AIR FORCE PERSONNEL, ERROR ANALYSIS, MAN

MACHINE

SYSTEMS, FAULT TOLERANCE

AB (27) This report documents a human error mitigation study conducted at the William J. Hughes Technical Center Research Development & Human Factors Laboratory. The study examined potential causes of human errors in future Airway Facilities (AF) operations control centers (OCCs). The participants consisted of nine specialists having expertise in current AF operations and knowledge of human error tendencies. The participants explored four operational scenarios, identified potential sources of error, and recommended specific solutions. A research team extracted common themes from participant responses to each of the four scenarios and identified general sources of potential error. They made specific recommendations for mitigating error in future OCC facilities.

AN (1) AD-A363 587/XAG

FG (2) 050500

050200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Differential Prediction of FAA Academy Performance on the Basis of Race and Written Air Traffic Control Specialist Aptitude Test Scores.

AU (10) Broach, Dana

Farmer, William L.

Young, Willie C.

RD (11) May 1999

PG (12) 28 Pages

RS (14) DOT/FAA/AM-99/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PREDICTIONS, *AIR TRAFFIC CONTROL SYSTEMS, *APTITUDE TESTS, *EQUAL

EMPLOYMENT OPPORTUNITY, *AFRICAN AMERICANS

JOB, PERFORMANCE TESTS, REGRESSION ANALYSIS, PERSONNEL SELECTION,

SCORING, CAUCASIANS

ID (25) *AIR TRAFFIC CONTROL SPECIALIST (ATCS), UNIFORM GUIDELINES ON EMPLOYEE

SELECTION PROCEDURES(29 CFR1607)

AB (27) The written air traffic control specialist (ATCS) aptitude test battery was evaluated for evidence of predictive bias within the framework of the Uniform Guidelines on Employee Selection Procedures (29 CFR 1607) in a retrospective analysis. Step-down hierarchical regression analysis (Lautenschlager & Mendoza, 1986) was used to investigate differential prediction of performance in initial ATCS training at the Federal Aviation Administration (FAA) Academy in a sample of 282 African-American and 8,542 white first-time competitive entrants. Analysis based on correlations without corrections for restriction in range found significant differences in the intercepts, but not slopes, for African Americans and whites. Analysis based on correlations, corrected for explicit and implicit restriction in range, found significant differences in slopes and intercepts by race, suggesting that separate regression equations were appropriate to predict Academy performance for the groups. The two analyses indicated that the composite score on the written ATCS test battery exhibited predictive bias as defined by the Uniform Guidelines on Employee Selection Procedures (29 CFR 1607) and Cleary (1968). Specifically, the composite

score TMC over-predicted the performance of African Americans in initial training at the FAA Academy. As a consequence of the over-prediction, significantly more of the African Americans that were accepted into training for the ATCS occupation on the basis of their aptitude test scores went on to fail training than would have been expected on the basis of the common or majority (white) regression line. An alternative explanation is considered that the observed differential prediction reflected criterion bias or other group differences in factors such as educational achievement and age. A path analytic approach is outlined for investigating the complex interactions between test score, the criterion, race, education, and age.

AN (1) AD-A363 777/XAG

FG (2) 010200

061500

070400

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Formation of an Interfering Substance, 3,4-Dimethyl-5 - Phenyl 1,3 -Oxazolidine, During A Pseudoephedrine Urinalysis.

DN (9) Final rept.

AU (10) Lewis, Russell J.

Huffine, Edwin E.

Chaturvedi, Arvind K.

Canfield, Dennis V.

Mattson, Jerr

RD (11) May 1999

PG (12) 10 Pages

RS (14) DOT/FAA/AM-99/15

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *DRUGS, *URINE, *URINALYSIS

FOURIER TRANSFORMATION, LITERATURE SURVEYS, SYNTHESIS, CHEMICALS, PHASE, SPECTRA, METHANOLS, RETENTION(GENERAL), CONTAMINANTS,

QUALITY

ASSURANCE, INFRARED RADIATION, ALDEHYDES, FORMALDEHYDE,

CONDENSATION,

SOLID PHASES, MASS SPECTRA, ACCIDENT INVESTIGATIONS, MASS

SPECTROMETRY,

PSEUDOMONAS, THIN LAYER CHROMATOGRAPHY

ID (25) FORENSIC SCIENCE, *PSEUDOEPHEDRINE

AB (27) During fatal aviation accident investigations, bio-samples from the victims are submitted to the FAA Civil Aeromedical Institute for drug analysis. In the process of one such analysis, an unknown substance was found in a urine sample. Its initial analyses by thin layer chromatography and by liquid-liquid extraction/gas chromatography (GC) disclosed the presence of pseudoephedrine. Subsequent analyses of the reaccessioned sample by solid phase separation/GC Fourier transform infrared/GC mass spectrometry indicated that the retention times of the unknown substance matched with those of pseudoephedrine. However, its infrared and mass spectra were different-the -OH and -NH- groups were missing, a C-O-C group was present, and the molar mass was 12 atomic mass units (amu) more than that of pseudoephedrine. A subsequent literature search suggested that ephedrine-like amines react with aldehydes to form oxazolidines. Therefore, the 12-amu increase could be accounted for by condensation of pseudoephedrine with formaldehyde. Since this aldehyde is present in various grades of methanol, and methanol was used during the solid phase separation, 3,4-dimethyl-5-phenyl-1,3-oxazolidine was synthesized by using (+)-pseudoephedrine-HCl and formaldehyde. The analytical and spectral findings of the synthesized compound were consistent with those of the unknown interfering substance, confirming that it was the oxazolidine. Aldehyde contaminants can transform the drug of interest and may result in misidentification of a compound not originally present in specimens. Therefore, chemicals used in analyses should be of the highest available purity, and a multianalytical approach should be adopted to maintain a high degree of quality assurance.

AN (1) AD-A365 862/XAG

FG (2) 170703

010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Trajectory Prediction Accuracy Report: User Request Evaluation Tool (URET)/Center-TRACON Automation System (CTAS)

DN (9) Technical note

AU (10) Paglione, Mike M.

Ryan, Hollis F.

Oaks, Robert D.

Summerill, J. S.

Cale, Mary L.

RD (11) May 1999

PG (12) 547 Pages

RS (14) DOT/FAA/CT-TN99/10

RN (18) XH-DOT
RC (20) Unclassified report
DE (23) *FLIGHT PATHS
SCENARIOS, AUTOMATION, PERFORMANCE(ENGINEERING), RADAR TRACKING,
ERROR
ANALYSIS, GLOBAL POSITIONING SYSTEM, COMPUTER PROGRAM
VERIFICATION,
FLIGHT SIMULATION, AIR TRAFFIC, DECISION SUPPORT SYSTEMS, FREE
FLIGHT

TRAJECTORIES

ID (25) URET(USER REQUEST EVALUATION TOOL)

AB (27) This report presents the results of an independent analysis of the accuracy of the trajectory modelers implemented in the User Request Evaluation Tool (URET) and Center-TRACON Automation System (CTAS) prototypes. These results are based on the completion of the first phase of a planned two phased effort. As originally envisioned, efforts during Phase I would develop a generic methodology to measure the trajectory prediction accuracy of any decision support tool (DST), which would be validated by applying it to CTAS and URET based on their currently adapted sites. In Phase II, the methodology would be applied to URET and CTAS adapted to a common site and supplied with the same scenario. As such, the results from Phase I would have provided a common set of results based on the same site and scenario, allowing a comparison of the two trajectory modelers to be made, in support of research into the performance requirements for a common en route trajectory model. Due to funding cuts, this task was curtailed to the completion of Phase I. The results from this phase do provide the FAA with an independent set of scenario-based trajectory accuracy statistics for each DST, but they cannot be used to compare the two DSTs due to the confounding site-specific factors. A methodology was developed and CTAS and URET were measured based on one scenario each from their currently adapted sites (Fort Worth and Indianapolis, respectively). The Phase I study measured the spatial error between trajectory predictions versus the Host Computer System (HCS) track position reports, which were assumed to be the ground truth location of the aircraft. The spatial error consisted of horizontal and vertical errors. The horizontal error was further partitioned into two geometric components, lateral and longitudinal errors, representing the cross track and along track prediction errors. The focus of the analysis was on the overall trajectory accuracy of each DST, not on individual errors.

AN (1) AD-A362 480/XAG

FG (2) 230600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Aircraft Evacuations onto Escape Slides and Platforms II: Effects of
Exit Size

AU (10) McLean, Garnet A.
George, Mark H.
Funkhouser, Gordon E.
Chittum, Charles B.

RD (11) Apr 1999

PG (12) 11 Pages

RN (18) DOT/FAA/AM-99/10
XH-XD

RC (20) Unclassified report

DE (23) *ESCAPE SYSTEMS
SIMULATION, AIRCRAFT, SIZES(DIMENSIONS), FLOW RATE, PLATFORMS,
FUSELAGES, MOTIVATION, INFLATABLE STRUCTURES, EXITS, HEIGHT,
EVACUATION

ID (25) EMERGENCY EVACUATIONS, INFLATABLE ESCAPE SLIDES, EGRESS ROUTES

AB (27) Experiments were conducted to examine the effects of exit height on subject flow rates during simulated emergency evacuations from an aircraft fuselage. Egress was through (modified) Type-I exits, using inflatable escape slides and doorsill-height platforms configured with ramps for descent to the ground. A single-aisle aircraft simulator was equipped with 30-inch wide rectangular floor-level exits variously configured to achieve overall exit heights of 48, 60, and 72 inches. Human research subjects, ranging in age from 18 to 40 years, evacuated through the exits to the ground via both platform and slide egress routes.

AN (1) AD-A362 556/XAG

FG (2) 010300

061100

061500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) The First Seven Years (1991-1998) of the FAA's Postmortem Forensic
Toxicology Proficiency-Testing Program.

DN (9) Final rept.

AU (10) Chaturvedi, Arvind K.

RD (11) Apr 1999

PG (12) 15 Pages
RS (14) DOT/FAA/AM-99/11
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *RESEARCH FACILITIES, *AVIATION ACCIDENTS, *MEDICAL EXAMINATION,
*TOXICOLOGY, *NICOTINE
TISSUES(BIOLOGY), CHEMICALS, SAMPLING, QUALITY CONTROL, CASUALTIES,
LABORATORIES, UNIVERSITIES, QUALITY ASSURANCE, LIVER, DRUGS,
MEDICAL
PERSONNEL, BLOOD, URINE, MONEY, CAFFEINE, LITIGATION
ID (25) PT(PROFICIENCY TESTING)
AB (27) Postmortem biosamples from the victims of aviation accidents are
submitted to the Civil Aeromedical Institute (CAMI) for forensic
toxicology, wherein acquiring accurate and authentic analytical data is
the primary objective. Adherence to quality assurance/quality control
(QMOC) procedures is essential to achieve that objective, and
proficiency-testing (PT) is an integral part of QA/QC of laboratories.
However, there was previously no suitable PT program that could address
the complexity of forensic toxicology. Existing PT programs do not
include decomposed samples and solid tissues, and the majority of
aviation (and to some extent, even medical examiner and coroner) case
samples are putrid and of multiple types. Therefore, CAMI in July 1991
started such a needed PT program. This program is used to (i)
professionally develop and maintain technical currency on a voluntary,
interlaboratory, and self-evaluation basis and (ii) quantifiably assess
methods in the absence and presence of interfering substances. There
are currently about 30 laboratories in the program, including CAMI's
Toxicology and Accident Research Laboratory. Functioning under various
governmental/non-governmental agencies and academic institutions, these
laboratories represent a broad cross- section of the country. PT
samples are distributed quarterly, and result summaries are sent to the
participants, while maintaining their anonymity. Since the inception of
the program, 28 PT samples encompassing whole blood, plasma, urine,
kidney, or liver, with (or without) drugs and common chemicals
(nicotine, caffeine, beta-phenylethylamine, etc.) have been evaluated
by the participants. Analytical findings were generally consistent with
the anticipated values, but they were dependent on the nature and
conditions of the specimens and types of the added analytes. Some
incidences of false positives of concern were noted, as well.

AN (1) AD-A363 331/XAG
FG (2) 010400
170703

230200
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) GPS User-Interface Design Problems
DN (9) Final rept.
AU (10) Williams, Kevin W.
RD (11) Apr 1999
PG (12) 11 Pages
RN (18) DOT/FAA/AM-99/13
XH-DOT/FAA/AM
RC (20) Unclassified report
DE (23) *GLOBAL POSITIONING SYSTEM, *FLIGHT INSTRUMENTS, *MAN COMPUTER
INTERFACE
COMPUTER AIDED DESIGN, HUMAN FACTORS ENGINEERING, DISPLAY
SYSTEMS,
AIRCRAFT EQUIPMENT, DESIGN CRITERIA, INSTRUMENT LANDINGS
AB (27) This paper is a review of human factors problems associated with the
user-interface design of a set of Global Positioning System (GPS)
receivers, certified for use in aircraft for instrument non-precision
approaches. The paper focuses on design problems associated with the
interfaces and specific inconsistencies across the set of interfaces
that could cause confusion or errors during operation. Some specific
problems addressed involve the layout and design of knobs and buttons;
control labeling inconsistencies across units; the placement and use of
warnings; feedback, or the lack thereof; and the integration of
specific flying tasks while using the receivers. Recommendations for
solving some of the problems are provided, as well as suggestions to
the FAA, GPS manufacturers, and pilots regarding the future development
and use of these products.

AN (1) AD-A363 458/XAG
FG (2) 050800
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) Cognitive Style and Learning: Performance of Adaptors and Innovators in
a Novel Dynamic Task.
DN (9) Final rept.
AU (10) Pounds, Julia
Bailey, Larry L.
RD (11) Apr 1999
PG (12) 12 Pages

RS (14) DADOT/FAA/AM-99/12
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *SKILLS, *PERFORMANCE(HUMAN), *COGNITION
SCENARIOS, DYNAMICS, AIR TRAFFIC CONTROL SYSTEMS, PROBLEM
SOLVING,
COMPUTER APPLICATIONS, LEARNING

ID (25) INNOVATION

AB (27) This research investigated whether cognitive style (Kirton, 1976) influenced performance in a novel dynamic task modeled on the task of controlling air traffic. It was hypothesized that participants who preferred a more adaptive style of processing would show better performance than those who preferred a more innovative style. Problems were presented to participants using computer-based scenarios in screening, practice, and experimental trials. Based on earlier research, better performance was more likely when the participant adhered to the rules of the scenario. Performance was measured by the number of times the participant violated two types of scenario rules. Screening, practice, and experimental performance were analyzed separately. Cognitive style had a significant effect on performance only during experimental trials. Performance of Adaptors improved across trials while that of Innovators did not. Results suggest that Innovators, although perhaps having some initial advantage, may not be able to sustain performance in this type of task.

AN (1) AD-A363 461/XAG

FG (2) 061100
061500
070600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Urinary Genotyping for DQA1 and PM Loci Using PCR-Based Amplification:
Effects of Volume, Storage Temperature, Preservatives, and Aging on DNA
extraction and Typing.

DN (9) Final rept.

AU (10) Vu, Nicole T.
Chaturvedi, Arvind K.
Canfield, Dennis V.

RD (11) Apr 1999

PG (12) 13 Pages

RS (14) DOT/FAA/AM-99/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *POLYMERS, *DEOXYRIBONUCLEIC ACIDS, *ROOM TEMPERATURE, *URINE,
*TOXICOLOGY, *DRUG TESTING
TEST AND EVALUATION, RECOVERY, AGING(MATERIALS), POLYMERIZATION,
VOLUNTEERS, AERONAUTICS, PURIFICATION, FREEZING, QUALITY, SAMPLING,
STORAGE, DRUGS, CENTRIFUGE SEPARATION, LITIGATION

ID (25) *POLYMERASE CHAIN REACTION, PCR(POLYMERASE CHAIN REACTION),
GENETIC

MARKERS, GENOTYPING, DQA1, PM LOCI

AB (27) Urine is often the sample of choice for drug screening in aviation/general forensic toxicology and in workplace drug testing. In some instances, the origin of the submitted samples may be challenged because of the medicolegal and socioeconomic consequences of a positive drug test. Methods for individualization of biosamples have reached a new boundary with the application of the polymerase chain reaction (PCR) in DNA profiling, but a successful characterization of the urine specimens depends on the quantity and quality of DNA present in the samples. Therefore, the present study investigated the influence of storage conditions, sample volumes, concentration modes, extraction procedures, and chemical preservations on the quantity of DNA recovered, as well as the success rate of PCR-based urinary genotyping for DQA1 and PM loci. Urine specimens from male and female volunteers were divided and stored at various temperatures for up to 30 days. The results suggested that sample purification by dialfiltration, using 3,000-100,000 molecular weight cut-off filters, did not enhance DNA recovery and typing rate compared with simple centrifugation procedures. Extraction of urinary DNA by the organic method and by the resin method gave comparable typing results. Larger sample volume yielded higher amount of DNA, but the typing rates were not affected for sample volumes between 1 to 5 ml. The quantifiable amounts of DNA present were found to be greater in female (14-200 ng/ml) than in male (4-60 ng/ml) samples and decreased with the elapsed time under both room temperature (RT) and frozen storage. Typing of the male samples also demonstrated that RT storage samples produced significantly higher success rates than that of frozen samples, while there was only marginal difference in the DNA typing rates among the conditions tested using female samples.

AN (1) AD-A363 589/XAG

FG (2) 170700
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) ARTS 111A Terminal Baseline Research Report

AU (10) Mogford, Richard H.
Allendoerfer, Kenneth R.
Galushka, Joseph

RD (11) Apr 1999

PG (12) 85 Pages

RS (14) DOT/FAA/CT-TN99/7

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *GROUND CONTROLLED APPROACH
RADAR, *BASE

LINES

CONTROL, SIMULATION, MEASUREMENT, POSITION(LOCATION), VOLUME,
AUTOMATION, AIRCRAFT, TRAFFIC, STATISTICS, TARGETS, CONFIGURATIONS,

AIR

SPACE, RECORDING SYSTEMS, RADAR SIGNALS, WORKLOAD, RUNWAYS,
QUESTIONNAIRES, PUBLIC OPINION, DATA PROCESSING TERMINALS

ID (25) ARTS(AUTOMATED RADAR TERMINAL SYSTEM), TRACON(TERMINAL RADAR
APPROACH

CONTROL)

AB (27) This report provides baseline measurements on the Automated Radar Terminal System (ARTS) IIIA. Researchers developed a set of measurements useful for evaluating the efficiency and effectiveness of terminal air traffic control automation systems. These measurements followed six high-level operational constructs: Safety, Capacity, Performance, Workload, Usability, and Simulation Fidelity. To collect these measurements for the ARTS IIIA, we conducted an air traffic control simulation using four sectors of Boston Terminal Radar Approach Control (TRACON) airspace with a traffic volume representing a 90th percentile day. Twelve controllers from Boston TRACON served as participants in the 3-week study. Recordings from the Target Generation Facility and Continuous Data Recording (CDR) systems provided objective data for measures such as the average number of aircraft controlled and the average number of data entries. Questionnaires and expert observer rating forms provided subjective data for measures such as the average controller workload and controller performance. This report provides statistics at several levels of specificity: aggregated across all sectors and runway configurations, by individual sector and runway configuration, and by 15-min intervals. Data from the study are intended to provide a meaningful representation of the TRACON controller position. We provide guidance on using these baseline measurements to examine the effectiveness and efficiency of future terminal automation systems. This guidance includes recommendations for merging quantitative statistics with controller opinion. We also

include recommendations regarding the appropriate and inappropriate use of these data.

AN (1) AD-A363 930/XAG

FG (2) 201100

**CA (5) FEDERAL AVIATION ADMINISTRATION ATLANTIC CITY NJ AIRPORT AND
AIRCRAFT**

SAFETY RESEARCH AND DEVELOPMENT

**TI (6) Comparison of Boundary Correction Factor Solutions for Two Symmetric
Cracks in a Straight-Shank Hole**

DN (9) Final rept.

AU (10) Bakuckas, John G., Jr

RD (11) Apr 1999

PG (12) 22 Pages

RS (14) DOT/FAA/AR-98/36

RN (18) XH-DOT/FAA

RC (20) Unclassified report

DE (23) *STRESS ANALYSIS, *CRACK PROPAGATION

LOAD DISTRIBUTION, FINITE ELEMENT ANALYSIS, STRUCTURAL ANALYSIS,
FRACTURE(MECHANICS), STRESS CONCENTRATION

ID (25) STRESS INTENSITY FACTORS

AB (27) This report compares the mode 1 boundary correction factor solutions for two symmetric elliptical cracks emanating from a straight-shank hole. A variety of methods were used to generate the solutions. A global-intermediate-local (GIL) hierarchical approach was developed using the finite element method (FEM). Comparisons were made with the following methods: the FEM with the equivalent domain integral, semiempirical boundary correction factor equations, the finite element alternating method, the boundary element method with the crack opening displacement approach, the boundary element method using special crack-tip elements, and the three-dimensional weight function method. The boundary correction factor solutions were within a band of +/- 3% of the average solution.

AN (1) AD-A364 937/XAG

FG (2) 230200

250400

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Controller Evaluation of CPDLC Services Implemented on the Display
System Replacement (DSR) Workstation: Study 1 -- Initial Assessment of
Services Transitioned From the PVD and Design Development for**

Additional Services

- DN (9) Technical note
AU (10) Darby, Evan
Shingledecker, Clark
RD (11) Apr 1999
PG (12) 61 Pages
RS (14) DOT/FAA/CT-TN99/11
RN (18) XH-DOT/FAA
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *HUMAN FACTORS ENGINEERING
FLIGHT CREWS, DISPLAY SYSTEMS, MAN COMPUTER INTERFACE, DATA LINKS,
DOWNLINKS, AIR TRAFFIC CONTROLLERS
ID (25) CPDLC(CONTROLLER PILOT DATA LINK COMMUNICATIONS), DSR(DISPLAY
SYSTEM
REPLACEMENT)
AB (27) This report presents the results of the first of a series of studies
being conducted by ACT-35() at the Federal Aviation Administration
(FAA) William J. Hughes Technical Center to evaluate and refine the
controller human computer interface (HCI), air traffic procedures, and
training for Controller Pilot Data Link Communications (CPDLC). The
objectives of this study were to: (1) evaluate the baseline Display
System Replacement (DSR) HCI and functionality for the four CPDLC Build
I (CPDLC I) services; (2) assess initial concepts for implementing the
route assignment and downlink services needed for CPDLC Build IA (CPDLC
IA); and (3) examine alternatives for Full Data Block (FDB) Data Link
symbols available in DSIL

AN (1) AD-A366 348/XAG

FG (2) 010500
050900
230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Limited Job Task Analysis (JTA) For Aviation Weather Products

- DN (9) Technical note
AU (10) Banner, William
Carty, Thomas
RD (11) Apr 1999
PG (12) 151 Pages
RS (14) DOT/FAA/CT-TN98/11
RN (18) XH-XD
RC (20) Unclassified report

- DE (23) *AIR TRAFFIC CONTROLLERS, *JOB ANALYSIS, *WEATHER
COMMUNICATIONS
HUMAN FACTORS ENGINEERING, USER NEEDS, MAN COMPUTER INTERFACE,
PROFICIENCY, AIR TRAFFIC CONTROL TERMINAL AREAS
AB (27) To assist in the understanding of weather product use by Air Traffic
Control Specialists (ATCS) and Automated Flight Service Station (AFSS)
specialists, the Federal Aviation Administration (FAA) William J.
Hughes Technical Center conducted a Limited Job Task Analysis (JTA) for
select positions at an Automated Flight Service Station (AFSS) from
January 10, 1994, to January 13, 1994, and an Air Route Traffic Control
Center (ARTCC) from January 10, 1994, to January 18, 1994. Both
facilities are located in Fort Worth, Texas. Among the positions
evaluated were Preflight Specialists, Inflight Specialists, and Enroute
Flight Advisory Service (EFAS) Specialists from the Ft. Worth AFSS and
Traffic Management Coordinators (TMC) from the Ft. Worth ARTCC. The JTA
was developed in two stages. The first stage of the JTA was a research
effort in which several reference documents were used to develop task
lists and flowcharts for Flight Service Specialists and TMCs. The
second stage of the JTA involved confirming the flowcharts and weather
tables developed during the first stage. This was accomplished by
comparing the flowcharts and weather tables to observed job tasks and
weather information requirements of specialists and controllers at the
Ft. Worth AFSS and the Ft. Worth ARTCC. Although a few discrepancies
were noted for the Inflight Specialists, the majority of the
information in the flowcharts was confirmed during the observation
session with Preflight and EFAS Specialists and TMCs. The discrepancies
noted are discussed in detail along with issues relating to the user
system interface of weather systems and recommendations for new
aviation weather products.

AN (1) AD-A361 233/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) A Survey of Pilots on the Dissemination of Safety Information

- DN (9) Final rept.
AU (10) Rakovan, Lori
Wiggins, Mark W.
Jensen, Richard S.
Hunter, David R.
RD (11) Mar 1999
PG (12) 70 Pages

RS (14) DOT/FAA/AM-99/7
RN (18) XH-XD
RC (20) Unclassified report
NO (21) Prepared in collaboration with Ohio State University, Columbus, Ohio
and the University of Western Sydney, Sydney, Australia.
DE (23) *AVIATION SAFETY
TRAINING, COMPUTERS, PILOTS, DEMOGRAPHY, COMMERCIAL AVIATION,
AVIATION
ACCIDENTS, AIR TRANSPORTATION, AVIATION PERSONNEL, AWARENESS
AB (27) A survey was conducted to obtain information from the pilot population
on erections of safety-related training currently being offered, its
usefulness, and the process through which it might be better
disseminated to the general aviation population. The questionnaire
assessed use of safety information, safety awareness, computer/video
use, pilot self-assessment of proficiency, demographic information, and
stressful experiences. In addition, four open-ended questions were
included to allow pilots to freely express themselves on a variety of
safety issues. The questionnaire was sent to 6,000 pilots
(approximately 2,000 each to private, commercial, and airline
transport) selected randomly from the pilot population. Responses were
received from 1,822 (30.4% of the sample). Of the respondents, 31.3%
were private pilots, 34.2% were commercial pilots, and 34.5% were
airline transport pilots. The frequency of response to all
questionnaire items for the three certificate categories are provided,
plus analyses of the responses of pilots in a target group consisting
of all private pilots and those commercial pilots who had not flown for
hire. Analyses also compared the responses of: (1) seminar attendees
versus non-attendees, and (2) pilots who had been in accidents versus
those who had not. Recommendations to improve the attendance of pilots
at FAA-sponsored safety seminars are given.

AN (1) AD-A362 158/XAG
FG (2) 170703
230200
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) Optimizing Blink Parameters for Highlighting an Air Traffic Control
Situation Display.
DN (9) Final rept.
AU (10) Milburn, Nelda J.
Mertens, Henry W.
RD (11) Mar 1999

PG (12) 26 Pages
RN (18) DOT/FAA/AM-99/8
XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *HUMAN FACTORS ENGINEERING
DISPLAY SYSTEMS, AMPLITUDE, VISUAL TARGETS
ID (25) BLINKING TARGETS, TEXT SIZE, ATTENTION GETTING, FLASHING
AB (27) Research suggests blinking targets are more alerting than steady
targets; however, several factors can interact with blinking to either
improve or degrade its attention-getting value. Those factors include
target size, color, brightness contrast, frequency of blink, and the
time the blink is at maximum brightness relative to the time it is off
or dim during the blink cycle. No guidelines were found for determining
the optimal attention-getting blink amplitude (the percentage of
decrease in target brightness from a standard) and the interaction of
blink amplitude with the other blink characteristics mentioned above.
Thirty-six participants were asked to locate and select blinking blocks
of text on a simulated air traffic control display to examine the
interaction of blink frequencies, amplitudes, and duration with size of
text. Our results support the use of amplitudes 75% or greater combined
with frequencies from 2 to 4 Hertz and text size 0.15 inch or greater
for optimum highlighting value in visual search tasks.

AN (1) AD-A362 193/XAG
FG (2) 010600
170703
230200
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) A Usability Survey of GPS Avionics Equipment: Some Preliminary
Findings.
DN (9) Final rept.
AU (10) Joseph, Kurt M.
Jahns, Dieter W.
Nendick, Michael D.
George, Ross St.
RD (11) Mar 1999
PG (12) 10 Pages
RN (18) DOT/FAA/AM-99/9
XH-XD
RC (20) Unclassified report
NO (21) Prepared in collaboration with Syner Tech Associates, Bellingham, WA

and University of Newcastle, Callaghan, Australia.

DE (23) *HUMAN FACTORS ENGINEERING, *GLOBAL POSITIONING SYSTEM, *GENERAL

AVIATION AIRCRAFT

MULTIVARIATE ANALYSIS, AIR NAVIGATION, AVIATION SAFETY

ID (25) CERTIFICATION, PILOT EXPERIENCE

AB (27) The rapid introduction of Global Positioning System (GPS) receivers for airborne navigation has outpaced the capacity of international aviation authorities to resolve human factors issues that concern safe and efficient use of such devices. Current certification technical standards appear to have had little influence on standardizing receiver architectures, interfaces, and operating manuals-despite evidence from research simulation and flight tests that lack of standardization may undermine safety. The present research used factor-analytic techniques to reduce 308 pilots' ratings from a 163-item survey to 24 factors. These factors are suitable for identifying human factors issues related to GPS receiver displays and controls, operating procedures, navigation performance, training, and other topical areas. Multivariate analysis of variance revealed that GPS experience and receiver type influenced pilot ratings for several of these factors. The results of this limited survey are consistent with previous research, and their application to certification procedures and standards is discussed.

AN (1) AD-A360 725/XAG

FG (2) 010600

131200

230200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Comparison of Buckle Release Timing for Push-Button and Lift-Latch Belt Buckles

AU (10) Gowdy, V.

George, M.

McLean, G. A.

RD (11) Feb 1999

PG (12) 11 Pages

RN (18) DOT/FAA/AM-99/5

XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIRCRAFT, *COMPARISON, *RESTRAINT, *RELEASE MECHANISMS, *PUSH BUTTONS

MEASUREMENT, REACTION TIME, HUMAN FACTORS ENGINEERING, SAFETY,

INSTRUMENTATION, CIVIL AVIATION

ID (25) AIRCRAFT PASSENGER RESTRAINT SYSTEMS, *LIFT-LATCH BUCKLES, RESPONSE

TIME, PUSH BUTTON BUCKLES, SMALL AIRCRAFT RESTRAINTS, *BUCKLE RELEASE

TIMING

AB (27) Small aircraft passenger restraint systems most commonly use lift-latch type buckle release mechanisms. Push-button buckle release mechanisms, similar to those used in contemporary automobiles, have rarely been used on passenger restraints. Although push-button buckles are not explicitly prohibited by Federal Aviation Administration (FAA) regulations, the human factors aspects of introducing push-button buckles in an aircraft environment are important considerations from the standpoint of safety. A test program was conducted by the FAA Civil Aeromedical Institute (CAMI) with volunteer human subjects to measure and compare the times it takes a passenger to release a push-button buckle on a 3-point restraint, a common lift-latch buckle on a 3-point restraint, and a lift-latch buckle on a common lap belt. Sixty subjects were tested in a repeated-measures counterbalanced test protocol, which included instrumentation to measure the response times to release the buckle. Response time for the subjects to exit the seat and press a remote button was also acquired. This report includes the physical profiles of the subjects, the test protocol, and a statistical summary of the results. Based on the data acquired in this project, there was no major difference in the response times of the human subjects to release or egress from a 3-point restraint with a push-button buckle, compared with a lift-latch buckle on a 3-point or a common lap belt restraint. This study was intended to address factors associated with the use of push-button buckles restraint systems in small airplanes. Any consideration of the use of push-button buckles on commercial transport aircraft passenger seats should include data on a broader range of human factors.

AN (1) AD-A360 727/XAG

FG (2) 010309

061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Concepts Providing for Physiological Protection After Aircraft Cabin Decompression in The Altitude Range of 60,000 to 80,000 Feet above Sea Level

AU (10) Garner, R. P.

RD (11) Feb 1999
PG (12) 16 Pages
RN (18) DOT/FAA/AM-99/4
XH-XD

RC (20) Unclassified report
DE (23) *PHYSIOLOGICAL EFFECTS, *SUPERSONIC TRANSPORT AIRCRAFT
HIGH ALTITUDE, HYPOXIA, CIVIL AVIATION, PRESSURIZATION, ALTITUDE,
DECOMPRESSION, OXYGEN EQUIPMENT, AIRCRAFT CABINS,
ADAPTATION(PHYSIOLOGY)

ID (25) HSCT(HIGH SPEED CIVIL TRANSPORT), CABIN SAFETY
AB (27) The European aircraft Concorde provides evidence that the technology required for building supersonic passenger transport has long been available. In the United States, development efforts for this type of airplane were functionally abandoned in the early 1970s. In recent years, changes in technology, world political structures, and economics have stimulated interest in the development of a fleet of supersonic transports for use in civilian aviation. The future aircraft has been designated the High Speed Civil Transport (HSCT). As part of the development process, all potential challenges associated with design characteristics of the aircraft must be addressed. This report reviews the physiological issues related to cabin decompression during high-altitude flight. A number of strategies for protecting passengers and crew members after high-altitude cabin decompression are discussed. Due to the physiological consequences associated with high-altitude decompression, a combination of protective systems may be necessary. At a minimum, it would appear that increased structural integrity of the cabin, a repressurization system, and an optimally designed supplemental oxygen system for crew and passengers are required.

AN (1) AD-A361 239/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Refractive Surgery in the Civil Airman Population by Class of Medical Certificate and by Aviation Occupation

DN (9) Final rept.
AU (10) Nakagawara, Van B.
Wood, Kathryn J.
Montgomery, Ronald W.

RD (11) Feb 1999
PG (12) 12 Pages
RN (18) DOT/FAA/AM-99/6

XH-XD
RC (20) Unclassified report
DE (23) *VISION, *REFRACTION, *SURGERY, *OPHTHALMOLOGY
PILOTS, COMMERCIAL AVIATION, CIVIL AVIATION, EYE, PATHOLOGY, AVIATION
PERSONNEL, VISUAL ACUITY, AVIATION MEDICINE
ID (25) REFRACTIVE SURGERY, RADIAL KERATOTOMY, PRK(PHOTOREFRACTIVE
KERATOTOMY)
AB (27) Refractive surgical procedures performed in the United States have increased in recent years and continued growth is projected in the near future. These procedures have been associated with numerous side-effects, including glare, reduced contrast sensitivity, and fluctuating visual acuity. The quality of vision after refractive surgery may be unacceptable in a cockpit environment. This report reviews the aeromedical certification experience with the refractive surgery population. Active airmen with FAA-specific pathology codes 130 (radial keratotomy) and 5179 (general eye pathology with surgical prefix), during the period 1 January 1994 through 31 December 1996, were identified in the Consolidated Airman Information System medical database. The medical records of airmen with pathology code 5179 were reviewed. Airmen identified by records review as having had refractive surgery, and those with pathology code 130 were collated into a database and analyzed against demographic data extracted from Federal Aviation Administration (FAA) publications. Airmen with refractive surgery were further stratified by aviation occupation (pilot, copilot, first and second officer, and flight engineer). There were 3,761 airmen identified as having had some type of refractive surgical procedure during the study period. The prevalence rate of refractive surgery in the total civil airman population was 6.21/1,000 airmen. By class of airman medical certificate, the prevalence rate was 3.60/1,000 for first-class, 6.26/1,000 for second-class, and 7.43/1,000 for third-class holders. A total of 133 airmen (125 pilots and 8 flight engineers) with refractive surgery was identified as employees of scheduled and nonscheduled airlines. Airmen who have had refractive surgery are present in all classes of civil aeromedical certificate holders, including a substantial number of crewmembers who fly for commercial airlines.

AN (1) AD-A360 592/XAG
FG (2) 010600
060500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 through 1998.

DN (9) Final rept.

AU (10) Collins, William E.
Wayda, Michael E.

RD (11) Jan 1999

PG (12) 83 Pages

RS (14) DOT/FAA/AM-99/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *AVIATION MEDICINE

PERFORMANCE(HUMAN), REPORTS, CIVIL AVIATION, CIVIL AFFAIRS

ID (25) CAMI(CIVIL AEROMEDICAL INSTITUTE)

AB (27) An index to Federal Aviation Administration Office of Aviation Medicine Repots (1964-1998) and Civil Aeromedical Institute Reports is presented for those engaged in aviation medicine and related activities. The index lists all FAA aviation medicine reports published from 1961 through 1998: chronologically, alphabetically by author, and alphabetically by subject. A foreword describes aspects of the Civil Aeromedical Institute's 38 years of service, describes the index's sections, and explains how to obtain copies of published Office of Aviation Medicine technical reports.

AN (1) AD-A360 730/XAG

**FG (2) 010600
061000**

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) The Role of Shift Work And Fatigue in Air Traffic Control Operational Errors and Incidents

AU (10) Della Rocco, P. S.

RD (11) Jan 1999

PG (12) 28 Pages

RN (18) DOT/FAA/AM-99/2
XH-XD

RC (20) Unclassified report

DE (23) *FATIGUE(PHYSIOLOGY)

DATA BASES, AIR TRAFFIC CONTROL SYSTEMS, OPERATIONAL

EFFECTIVENESS,

ERRORS, CIVIL AVIATION, SPECIALISTS, WORKLOAD, AVIATION SAFETY, ATTENTION

ID (25) SHIFT WORK, OPERATIONAL ERRORS, OPERATIONAL INCIDENTS

AB (27) This report was developed from a collaborative effort between the FAA

Civil Aeromedical Institute's (CAMI's) Shift Work and Fatigue Research Program and the National Aeronautics and Space Administration (NASA) Ames Research Center's Fatigue Countermeasures Program. The purpose of this report was to examine existing databases to assess the extent to which shift work and fatigue might be factors associated with incidents and errors in air traffic control (ATC) operations.

AN (1) AD-A361 248/XAG

**FG (2) 040200
120700**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Test and Evaluation (OT&E) Test Plan for the Federal Aviation Administration (FAA) Bulk Weather Telecommunications Gateway (FBWTG)

AU (10) Khatiwala, Bart
Benner, William E.
DiMassa, Gerald

RD (11) Jan 1999

PG (12) 42 Pages

RS (14) DOT/FAA/CT-TN-99/2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMPUTER GATEWAYS, *METEOROLOGICAL DATA, *WEATHER FORECASTING

TEST AND EVALUATION, STRATEGY, WEATHER, MODELS, OBSERVATION, AIRBORNE,

TEST METHODS, TEST EQUIPMENT, OPERATIONAL EFFECTIVENESS, PLANNING, DATA

ACQUISITION, TELECOMMUNICATIONS, FILTERS, EXITS

ID (25) FBWTG(FAA BULK WEATHER TELECOMMUNICATIONS GATEWAY), NWSTG(NATIONAL

WEATHER SERVICE TELECOMMUNICATIONS GATEWAY),

MDCRS(METEOROLOGICAL DATA

COLLECTION AND REPORTING SYSTEM), RUC(RAPID UPDATE CYCLE)

AB (27) The Federal Aviation Administration (FAA) Bulk Weather

Telecommunications Gateway (FBWTG) is a communications gateway to the FAA for high-resolution gridded weather forecast data (e.g., Eta Forecast Model, Aviation (AVN) and Rapid Update Cycle (RUC) and airborne observation data (e.g., Meteorological Data Collection and Reporting System (MDCRS)) from the National Weather Service Telecommunications Gateway (NWSTG). The FBWTG will provide the capability to simultaneously and continuously receive high-resolution

gridded weather forecast data and MDCRS data from the NWSTG and disseminate this information to other National Airspace System (NAS) subsystems. The purpose of this plan is to provide an overview of the Operational Test and Evaluation (OT&E) phase of System Testing for both pathways; NWSTG to FBWTG located at the Air Traffic Control System Command Center (ATCSCC), and FBWTG to National Weather Service (NWS) Filter Unit (NFU)-Test device located at the William J. Hughes Technical Center. To accomplish this objective, the FBWTG, an end-state subsystem, must be operationally integrated with NAS subsystems. This plan establishes test strategy, test objectives, test criteria, and detailed test and evaluation descriptions to be used in the generation of the Test Procedures and Test Report's entrance and exit criteria for the program.

AN (1) AD-A359 346/XAG

**FG (2) 010600
081200**

CA (5) FEDERAL AVIATION ADMINISTRATION ATLANTIC CITY NJ AIRPORT AND AIRCRAFT

SAFETY RESEARCH AND DEVELOPMENT

TI (6) Mixed-Phase Icing Conditions: A Review

DN (9) Final rept.

AU (10) Riley, James T.

RD (11) Dec 1998

PG (12) 45 Pages

RN (18) DOT/FAA/AR-98-76

XH-DOT/FAA/AR

RC (20) Unclassified report

DE (23) *ICE FORMATION, *AVIATION SAFETY

SIMULATION, CLOUDS, ENVIRONMENTS, HAZARDS, LIQUIDS, STRUCTURAL PROPERTIES, PARTICLES, WIND TUNNELS

ID (25) AIRCRAFT ICING, MIXED-PHASE CLOUDS, GLACIATED CLOUDS, LWC(LIQUID WATER

CONTENT)

AB (27) This report reviews publicly available evidence bearing upon possible safety hazards due to flight in mixed-phase conditions. Recent investigations with modern instrumentation suggest that these conditions are more frequent and widespread than had been realized. However, information characterizing these conditions which is suitable for addressing questions of aviation safety is very limited. Facility simulation of mixed-phase conditions is difficult and well-controlled simulations have been done in very few facilities in the world. It is not known how well the various methods that have been used actually

simulate the natural environment, nor with what degree of fidelity it needs to be simulated for the investigation of some safety questions. The limited data available from research flights does not indicate that there is any difference in performance effects caused by structural icing resulting from flight in mixed-phase cloud rather than in purely liquid supercooled cloud.

AN (1) AD-A359 966/XAG

FG (2) 010200

120500

230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Symbol Standardization in Airway Facilities

DN (9) Technical note

AU (10) Ahlstrom, Vicki

Cranston, Robert L.

Mogford, Richard

Ramakrishnan, Arvind

RD (11) Dec 1998

PG (12) 28 Pages

RS (14) DOT/FAA/CT-TN98/20

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMPUTER PROGRAMS, *AIR TRAFFIC CONTROL SYSTEMS, *HUMAN FACTORS

ENGINEERING

TEST AND EVALUATION, FIELD TESTS, TEAMS(PERSONNEL), TEST METHODS, STANDARDIZATION, USER NEEDS, AIR FORCE FACILITIES, SYMBOLS

AB (27) The purpose of this project was to develop and evaluate visual symbols

for future Airway Facilities (AF) systems. A research team designed

symbols, developed test software, and evaluated test procedures. A

subsequent field evaluation of these symbols resulted in user

assessment of two alternative visual symbols for 32 AF facilities and

services. Two groups of 14 AF field subjects learned and evaluated

alternative symbols. The report provides sufficient data to show the

quality differences between the various symbols as judged by the user

community. This report provides a recommended set of AF

facility/service symbols for standardized use.

AN (1) AD-A362 808/XAG

FG (2) 040200

050200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) AWOS Data Acquisition System (ADAS), Automated Lightning Detection and Reporting System (ALDARS), Operational Test and Evaluation (OT & E) Final Test Report.

DN (9) Technical note

AU (10) Groot, Donald

Vuong, Hugh

Schlain, Ed

Stratton, Jock

RD (11) Dec 1998

PG (12) 721 Pages

RS (14) DOT/FAA/CT-TN98/23

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DETECTION, *LIGHTNING, *DATA ACQUISITION

TEST AND EVALUATION, REQUIREMENTS, INTEGRATED SYSTEMS, AUTOMATION,

WEATHER, OBSERVATION, OPERATIONAL EFFECTIVENESS, AERONAUTICS, SURFACES,

OPERATION

ID (25) *LIGHTNING DETECTION, AWOS(AUTOMATED WEATHER OBSERVATION SYSTEM),

ADAS(AWOS DATA ACQUISITION SYSTEM), ALDARS(AUTOMATED LIGHTNING DETECTION AND REPORTING SYSTEM)

AB (27) The Federal Aviation Administration (FAA) Automated Weather Observation System (AWOS) Data Acquisition System (ADAS)/Automated Lightning Detection and Reporting System (ALDARS) Operation Test and Evaluation (OT&E) Final Test Report is prepared by the ADAS/ALDARS Test Director. This report provides the procedures, results, analysis, significant problems, and Problem Trouble Reports (PTR) for each test. The report also provides overall conclusions and recommendations that flow from the OT&E. The purpose of the ADAS/ALDARS project is to incorporate lightning data into the National Airspace System (NAS) via the Automated Surface Observation System (ASOS) AWOS One-Minute Observations (OMO) and the Aviation Routine Weather Report (METAR) and Aviation Selected Special Weather Report (SPECI) weather messages. This project also incorporated the capability for ADAS to generate METAR format weather messages and interface with the Integrated Terminal Weather System (ITWS). ADAS/ALDARS OT&E was performed to verify that all of the NAS level requirements associated with this project were correctly implemented. All testing was performed by the ACT-320 Weather Branch at the FAA William J. Hughes Technical Center.

AN (1) AD-A355 579/XAG

FG (2) 150100

150600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Special Military Operations 7610.4J

RD (11) 03 Nov 1998

PG (12) 350 Pages

RS (14) FAA-7610.4J

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *MILITARY OPERATIONS, *AIR TRAFFIC CONTROL SYSTEMS, *MILITARY PLANNING,

*SPECIAL OPERATIONS FORCES

AIR DEFENSE, NATIONAL GUARD, MILITARY RESERVES, DEFENSE SYSTEMS, FACILITIES, AIR SPACE, INVENTORY, MILITARY EXERCISES, JUDGEMENT(PSYCHOLOGY), ELECTRONIC COUNTERMEASURES

AB (27) This order specifies procedures for air traffic control planning, coordination, and services during defense activities and special military operations. These procedures apply to all activities conducted in airspace controlled by or under the jurisdiction of the Federal Aviation Administration (FAA). The procedures contained herein shall be used as a planning guide by Department of Defense (DOD) personnel for operations in all areas. All facility personnel are required to be familiar with the provisions of this order which pertain to their operational responsibilities. Although every effort has been made to prescribe complete procedures for these activities, it is impossible to provide them to cover every circumstance. Therefore, when a situation arises for which there is no specific procedure covered in this order, personnel shall exercise their best judgment. For administrative purposes, the military services have included this order into their inventory. This has been done to emphasize its applicability to DOD personnel including the National Guard and the Reserve Forces. Operational control and administration of this order remains under the purview of the FAA. Any changes will be coordinated prior to adoption, consistent with FAA policy.

AN (1) AD-A357 729/XAG

FG (2) 060400

130700

230500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Performance of a Portable Oxygen Breathing System at 25,000 Feet
Altitude.

AU (10) Garner, R. P.

Murphy, R. E.

Hudgins, C. B.

Mandella, J. G., Jr.

RD (11) Nov 1998

PG (12) 11 Pages

RS (14) DOT/FAA/AM-98/27

RN (18) XH-FAA-AM

RC (20) Unclassified report

DE (23) *PORTABLE EQUIPMENT, *BREATHING APPARATUS, *HYPOBARIC
CONDITIONS,

*OXYGEN EQUIPMENT, *HYPOBARIC CHAMBERS, *OXYGEN MASKS
TEST AND EVALUATION, GROUND LEVEL, EXPOSURE(GENERAL), SATURATION,
VARIABLES, BASE LINES, CYLINDRICAL BODIES, PHYSIOLOGICAL EFFECTS,
HYPOXIA, FLOW, VALUE, SUPPLIES, ALTITUDE, SEA LEVEL, BLOOD, FEMALES,
ERGOMETERS

AB (27) A portable oxygen system utilizing open port dilution rebreathing mask
technology was tested for its ability to deliver an adequate supply of
oxygen at an altitude of 25,000 feet above sea level. Twenty-two
subjects, ii females and 11 males, participated in the study. Blood
oxygen saturation (SaO2) baseline levels for hypoxic exposure were
established for each subject. Altitude testing consisted of the subject
being placed in a hypobaric chamber and it being decompressed to an
altitude of 25,000 feet. Immediately after the start of the
decompression, the subject was instructed to don the oxygen mask and
start the flow of oxygen from the portable cylinder. Oxygen flow to the
mask was continuous at 4 liters per minute. Once at altitude, the
subjects pedaled a cycle ergometer at a resistance of 15 watts for five
minutes. SaO2 and other physiological variables were monitored
throughout the altitude exposure. SaO2 levels were maintained at ground
level values for all subjects throughout the altitude exposures. At no
point during the testing did oxygenation levels approach baseline
levels for hypoxic exposure. The portable oxygen system tested provided
protection from hypobaric hypoxia at an altitude of 25,000 feet.

AN (1) AD-A359 299/XAG

FG (2) 010300

110700

110900

CA (5) FEDERAL AVIATION ADMINISTRATION ATLANTIC CITY NJ AIRPORT AND
AIRCRAFT

SAFETY RESEARCH AND DEVELOPMENT

TI (6) Fire-Resistant Materials: Progress Report.

DN (9) Final rept.

AU (10) Lyon, Richard E.

RD (11) Nov 1998

PG (12) 294 Pages

RS (14) DOT/FAA/AR-97/100

RN (18) XH-FAA

RC (20) Unclassified report

DE (23) *FIRE RESISTANT MATERIALS, *THERMOSETTING PLASTICS, *FIRE SAFETY,
*AIRCRAFT CABINS

MATHEMATICAL MODELS, FIBERS, COMMERCIAL AIRCRAFT, SYNTHESIS,
POLYMERS,

COMPOSITE MATERIALS, ELASTOMERS, RUBBER, LONG RANGE(TIME),
COMBUSTION,

AVIATION ACCIDENTS, THERMOPLASTIC RESINS, TELECOMMUNICATIONS,
HEAT,

TEXTILES, DEATH, MOLDINGS, PASSENGERS, SEALING COMPOUNDS,
ADHESIVES,

ELECTRIC WIRE, FIRE RESISTANCE, TRANSPARENCIES, PADS(CUSHIONS),
CARPETS

AB (27) This report details the research being conducted by the Federal
Aviation Administration (FAA) to develop fire-safe cabin materials for
commercial aircraft; The objective of the Fire-Resistant Materials
program is to eliminate burning cabin materials as a cause of death in
aircraft accidents. Long-term activities include the synthesis of new,
thermally stable, low fuel value organic and inorganic polymer systems.
The synthesis effort is supported by fundamental research to understand
polymer combustion and fire resistance mechanisms using numerical and
analytic modeling and the development of new characterization
techniques. Aircraft materials which are targeted for upgraded fire
resistance are (1) thermoset resins for interior decorative panels,
secondary composites, and adhesives; (2) thermoplastics for decorative
facings, telecommunication equipment, passenger service units, molded
seat parts, transparencies, and electrical wiring; (3) textile fibers
for upholstery, carpets, decorative murals, tapestries; and (4)
elastomers/rubber for seat cushions, pillows, and sealants. During the
first 2 years of the program (1995- 1996) we have made significant
progress in achieving our interim goal of a 50 percent reduction in the
heat release rate of cabin materials by 2005 and zero heat release rate
cabin materials by 2018 with respect to the 1996 baseline for new

aircraft. A previous report, Fire-Resistant Materials: Research Overview, DOT/FAA/AR-97/99, summarizes the background and technical objectives of the program and serves as an introduction to the present document.

AN (1) AD-A359 344/XAG

FG (2) 170501

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Allocation of Attention with Head-Up Displays

DN (9) Final rept.

AU (10) Wickens, C. D.

Ververs, P. M.

RD (11) Nov 1998

PG (12) 19 Pages

RS (14) DOT/FAA/AM-98/28

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *HEAD UP DISPLAYS

SCANNING, SIMULATION, OPTICAL PROPERTIES, POSITION(LOCATION), RATIOS,

CONTRAST, FLIGHT CONTROL SYSTEMS, CLUTTER, INTENSITY, DISPLAY SYSTEMS,

REDUCTION, COSTS, IMAGES, VISIBILITY, INFLIGHT, ALLOCATIONS, AERIAL TARGETS, TARGET DETECTION, RANGE(DISTANCE), FLIGHT PATHS,

ATTENTION,

HORIZON, INSTRUMENT PANELS, CLEAR WEATHER

AB (27) Two experiments examined the effects of display location (head up vs.

head down) and image intensity/clutter on flight path performance and

mid-air target detection in a general aviation cruise flight

environment. In Experiment 1, a low-fidelity simulation, both

near-domain and far-domain Instrumentation were presented at the same

optical distance. Detection of commanded flight changes and maintenance

of desired flight path flight were generally better in the head-down

condition, an advantage attributed to the superior image contrast

ratios in that condition. In contrast, target detection was superior

with the head-up display, reflecting an attentional tradeoff Experiment

2 was performed with pilots viewing far-domain imagery (and airborne

targets) on an Evans and Sutherland display positioned near optical

infinity, head-up display (HUD) imagery at the same optical distance,

and head-down imagery at a near distance typical of the instrument

panel. The degree of clutter was also varied and image contrast ratios

were equated between head-up and head-down viewing conditions. Flight performance was equivalent between the HUD and head-down locations.

However, detection of both near-domain events (commanded changes) and far-domain targets was better in the HUD condition, revealing the HUD

benefit of reduced scanning. Adding extra information (clutter) to the HUD inhibited detection of both events in both head-up and head-down

locations. However, this clutter cost was diminished for far-domain

target detection if the added information was "low-lighted." Flight

performance was superior in clear weather, when the true horizon was

available for viewing. The data provided little evidence that attention

was modulated in depth (near vs. far domains), but rather suggested

that attention was modulated between tasks (flight control and

detection).

AN (1) AD-A369 713/XAG

FG (2) 120500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Reduced Flight Progress Strips in En Route ATC Mixed Environments

DN (9) Final rept.

AU (10) Durso, Francis T.

Truitt, Todd R.

Hackworth, Carla A.

Albright, Chris A.

Bleckely, M. K.

RD (11) Oct 1998

PG (12) 19 Pages

RS (14) DOT/FAA/AM-98/26

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *COMPUTER AIDED DIAGNOSIS, *AIR TRAFFIC CONTROLLERS

TEST AND EVALUATION, SIMULATION, ENVIRONMENTS, MANAGEMENT, FLIGHT CONTROL SYSTEMS, TEAMS(PERSONNEL), EFFICIENCY, RADAR, REDUCTION,

HIGH

ALTITUDE, MIXING, BEHAVIOR, INSTRUCTIONS, WORKLOAD, COMPENSATION, AIRPORTS, READ OUT TECHNIQUES, AWARENESS

AB (27) Currently, en route control of high altitude flights between airports

uses computer-augmented radar information available on the Plan View

Display (PVD), Computer Readout Device (CRD), and flight information

printed on Flight Progress Strips (PPSs). The EPS contains thirty-one

fields that supplement data available on the PVD. While an aircraft is

in a controller's sector, control instructions, changes to the flight plan, and other contacts with the aircraft are written on the corresponding strip. This report describes an experiment that compared the effects of using a standard-sized (1 5/16" x 8") FPS and an FPS reduced both in size (1" x 5") and information on the performance and workload of controller teams. The teams, from Minneapolis ARTCC, controlled simulated air traffic in a mixed radar- environment. Overall, the 1" x 5" reduced strip yielded deficits in the control of nonradar flights but not radar flights. This was evidenced in subject matter experts' evaluation of nonradar separation, strip processing and board management, and, to a marginal extent, in the efficiency of traffic movement through the sector. The radar-side (R-side) controller's awareness was also rated lower when using the smaller strips. Interestingly, the controllers' evaluation of their own performance did not reflect a difference between smaller and normal-sized strips. This may help explain why controllers did not compensate for the smaller strips to any great extent. Only R-side controllers exhibited compensatory behaviors and reported increased workload. R-side controllers also pointed to the PVD more often. Although there was little compensatory activity, R-side Controllers thought workload was greater with smaller strips. R-side controllers also felt it was more effortful and more frustrating working with the 1" x 5" strips.

AN (1) AD-A355 125/XAG

FG (2) 010200

061100

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Health Hazards of Combustion Products From Aircraft Composite Materials

DN (9) Final rept.

AU (10) Ganhi, Sanjeev

Lyon, Richard E.

RD (11) Sep 1998

PG (12) 29 Pages

RN (18) DOT/FAA/AR-98/34

XH-XD

RC (20) Unclassified report

DE (23) *HAZARDS, *HEALTH, *TOXICITY, *COMPOSITE MATERIALS, *AIRCRAFT FIRES

AIRCRAFT, INTERACTIONS, CHEMICALS, POLYMERS, FIBER REINFORCED

COMPOSITES, AIRBORNE, CARBON FIBERS, COMBUSTION, ADVERSE CONDITIONS,

VOLATILITY, ANIMALS, SYNERGISM, CANCER, COMBUSTION PRODUCTS

AB (27) Concerns about the potential health hazards of burning fiber-reinforced polymer composites in aircraft fires parallel the rising usage of these materials for commercial aircraft primary and secondary structures. An overview of the nature and the potential hazards associated with airborne carbon fibers released during flaming combustion of aircraft composites is presented. The current data derived from animal studies are insufficient to determine the acute toxicity of carbon fibers from burning composites. Further work is needed to examine the adverse health effects of volatile organic chemicals and to assess if any synergistic interactions exist with the fibers.

AN (1) AD-A355 185/XAG

FG (2) 050100

050800

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Predictors of Perceived Empowerment: An Initial Assessment

DN (9) Final rept.

AU (10) Thompson, Richard C.

Bailey, Lawrence L.

Farmer, William L.

RD (11) Sep 1998

PG (12) 12 Pages

RS (14) CARI-DOT/FAA/AM-98/24

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *PERCEPTION(PSYCHOLOGY), *INDUSTRIAL PSYCHOLOGY

CORPORATIONS, ATTITUDES(PSYCHOLOGY), MORALE, JOB SATISFACTION, BUSINESS

PROCESS REENGINEERING

AB (27) Empowerment of employees regarding their work procedures is considered an important approach to improved organizational effectiveness. Recent research suggests that employee empowerment is related to a number of variables besides organizational structure and the use of teams. The present paper examined a number of organizational context variables, obtained from three samples in two government agencies. Perceptions of empowerment were then predicted from these context variables. The results show that perceptions of communication are the strongest

predictor of empowerment perceptions across samples. In addition, the size of the communication slope estimate (B value) did not differ across the sample. The results support the contention that context factors besides teams and restructuring are related to empowerment. Specifically, communication perceptions are consistently the strongest predictor across samples and measures. Future research should examine the mechanisms that relate communication and empowerment.

AN (1) AD-A356 637/XAG

FG (2) 060400

090300

140400

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) The Aeromedical Certification of Photorefractive Keratectomy in Civil Aviation: A Reference Guide.

AU (10) Nakagawara, V. B.

Wood, K. J.

RD (11) Sep 1998

PG (12) 49 Pages

RS (14) DOT/FAA/AM-98/25

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *LASERS, *EYE, *REFRACTION, *PHOTOREFRACTIVE MATERIALS, *VISUAL ACUITY,

***AEROMEDICAL EVACUATION**

MATHEMATICAL MODELS, CONTRAST, ENVIRONMENTS, DECISION MAKING,

CIVIL

AVIATION, NIGHT VISION, DRUGS, SURGERY, FOOD, EXCIMERS, HAZE, PHARMACOLOGY, VISUAL DEFECTS, CORNEA, GLARE

ID (25) * PHOTOREFRACTIVE KERATECTOMY

AB (27) The use of surgery to correct refractive errors continues to evolve at a significant pace. Radial keratotomy (RK), the first widely accepted refractive surgical procedure, involves making radial incisions on the peripheral cornea. These incisions weaken the cornea and allow intraocular pressure to push the peripheral cornea out, flattening the apex and reducing refractive power. There are many disadvantages with RK that raise concerns regarding its use in the aviation environment. These include: progressive hyperopic shifts, reduced corneal strength, fluctuation of vision, glare, poor refractive predictability and altitude-induced corneal changes. In October 1995, the Food and Drug Administration approved the use of the excimer laser to perform

photorefractive keratectomy (PRK) to reshape the anterior curvature of the cornea. Since that time, PRK has become the refractive surgical procedure of choice. It has been reported that for low to moderate levels of myopia there is greater predictability, no fluctuation of vision or reduction in corneal strength, and about 85% of patients have uncorrected visual acuity of 20/40 or better. As with RK, there are aspects of PRK that raise concerns about its use in the aviation environment. Some of these include: night vision problems (e.g., glare, halos around lights, haze, starbursts, and dim lighting difficulties), reduced contrast sensitivity, stability of refraction, reduced best-corrected visual acuity, and induced anisometropia. Using a mathematical model, it was estimated that by the year 2000 there may be over 1,200 civil airmen who elect to have PRK performed. To provide the aeromedical community with information to formulate administrative decisions and policies associated with this new refractive surgical procedure, this paper reviews the results of clinical trials on PRK and discusses its applicability in aviation.

AN (1) AD-A356 974/XAG

FG (2) 010500

200600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Final Phase Runway Visual Range (RVR)/Automated Surface Observing System (ASOS) Interface Operational Test and Evaluation (OT&E) Report

DN (9) Technical note

AU (10) Benner, William

Carty, Thomas

McKinney, Michael

Jones, Micheal

RD (11) Sep 1998

PG (12) 94 Pages

RS (14) DOT/FAA/CT-TN98/18

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *VISIBILITY, *RUNWAYS

TEST AND EVALUATION, REQUIREMENTS, DEPLOYMENT, AUTOMATION, IMPACT,

INTERFACES, OPERATIONAL EFFECTIVENESS, SURFACES, INTERNATIONAL AIRPORTS, VISUAL PERCEPTION, INSTRUCTIONS, VISUAL ACUITY,

NAVIGATIONAL

AIDS

AB (27) This report summarizes results of Operational Test and Evaluation

(OT&E) performed on the Final Phase Runway Visual Range (RVR) Automated Surface Observing System (ASOS) Interface. Testing was conducted from June 23 through 27, 1997, at Memphis International Airport (MEM). This test effort follows two OT&E sessions for the Interim Phase RVR/ASOS Interface at MEM during October 1996, and January 1997. Refer to document DOT/FAA/CT-TN97/14 for results of OT&E on the Interim RVR/ASOS Interface. The purpose of OT&E was to verify adherence to requirements as stated in Interface Control Document (ICD) 50-SANW-1-0050 and determine the operational effectiveness and suitability of the interface within the National Airspace System (NAS). OT&E activities resulted in the observance of 20 problems documented as Test Trouble Reports (TTR). Of the identified problems, 3 related to New Generation RVR system operation, 7 related to ASOS performance, and 10 were associated with RVR installation and instruction documentation. Initial analysis indicates problems relating to RVR system operation will have a minimal, if any, impact on New Generation RVR/ASOS Interface performance. OT&E resulted in no problems directly relating to New Generation RVR/ASOS Interface operation. As a result, ACT-320 recommends deployment of the interface after the successful completion and passing of remote maintenance monitoring tests.

AN (1) AD-A357 674/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Agreement Between the National Air Traffic Controllers Association AFL/CIO and the Federal Aviation Administration Department of Transportation.

RD (11) Sep 1998

PG (12) 193 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AGREEMENTS, *BENEFITS, *JOB ANALYSIS, *EMPLOYEE RELATIONS, *LABOR

UNIONS

JOBS, HAZARDS, PROBLEM SOLVING, RETIREMENT, DOCUMENTS, SALARIES, RECOGNITION, PERSONNEL, GRADE STRUCTURE(PERSONNEL MANAGEMENT), SUPERVISION, INCAPACITATION

ID (25) FAA(FEDERAL AVIATION ADMINISTRATION)

AB (27) This Agreement is made by and between the National Air Traffic Controllers Association AFL-CIO (hereinafter "the Union"), and the Federal Aviation Administration, Department of Transportation (hereinafter "the Employer" or "the Agency"). The Union and the Agency are referred to collectively herein as "the Parties." The Table of

contents shows the Articles of all the Agreements.

AN (1) AD-A360 767/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Precision Runway Monitor (PRM) Baseline System Performance Characteristics Test Report

DN (9) Technical note

AU (10) Dudas, Charles

RD (11) Sep 1998

PG (12) 37 Pages

RS (14) DOT/FAA/CT-TN98/17

RN (18) XH-FAA-CT

RC (20) Unclassified report

DE (23) *MONITORING, *RUNWAYS

REQUIREMENTS, PERFORMANCE TESTS, SPECIFICATIONS, BASE LINES, PRECISION

ID (25) PRM(PRECISION RUNWAY MONITOR)

AB (27) This report documents the baseline performance characteristics of the Precision Runway Monitor (PRM) system as recorded during the various phases of the PRM test program. This report is a composite information from the various phases of the PRM test program. Based on participation in the PRM test program and a review of applicable test reports, ACT-310 has determined that the PRM system meets the PRM specification requirements for each of the identified 19 system performance characteristics. ACT-310 recommends no additional system performance testing of the PRM system is needed unless future design changes occur that may affect the baseline system performance characteristics.

AN (1) AD-B240 110/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Cold Regions Research and Engineering Laboratory Tests on the New Generation Runway Visual Range (RVR) Look-Down Visibility Sensor (VS)

RD (11) Sep 1998

PG (12) 97 Pages

RS (14) DOT/FAA/CT-TN98/22

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.
DE (23) *VISIBILITY, *RUNWAYS, *VISUAL ACUITY, *NAVIGATIONAL AIDS
TEMPERATURE, RECOVERY, LABORATORY TESTS, DETECTORS, RESISTANCE,
RATES,
ACCURACY, COLD REGIONS, ICE FORMATION, PRECIPITATION, SNOW,
FREEZING,
FOG, DEFICIENCIES, WINDOWS, LOW LEVEL, VISUAL PERCEPTION, HEATERS
ID (25) RVR(RUNWAY VISUAL RANGE)
DL (33) 12

AN (1) AD-A355 085/XAG

**FG (2) 050600
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

**TI (6) Summative Evaluation of the Collegiate Training Initiative for Air
Traffic Control Specialists Program: Progress of Minnesota Air Traffic
Control Training Center Graduates in En Route Field Training**

AU (10) Broach, D.

RD (11) Aug 1998

PG (12) 76 Pages

RN (18) DOT/FAA/AM-98/22
XH-XD

RC (20) Unclassified report

DE (23) *EDUCATION, *TRAINING, *AIR TRAFFIC CONTROLLERS
JOBS, SKILLS, COST ANALYSIS, FACILITIES, MINORITIES, ATTRITION,
TEAMS(PERSONNEL), RATES, COSTS, PERSONNEL, WORK, BENEFITS,
COOPERATION,
GRADUATES

ID (25) MNATCTC(MINNESOTA AIR TRAFFIC CONTROL TRAINING CENTER)

AB (27) This summative evaluation of the Collegiate Training Initiative for Air
Traffic Control Specialists focused on the progress of the Minnesota
Air Traffic Control Training Center (MnATCTC) graduates in en route
field training. The evaluation compared 136 MnATCTC graduates with 157
FAA academy graduates on 4 classes of measures: (a) diversity; (b)
progress in training at the first assigned field facility; (c)
attrition from the first assigned field facility; and (d) performance
ratings at the first assigned facility. A cost-benefit analysis for the
MnATCTC program was also conducted. There were significantly more women
in the MnATCTC (40%) than in the FAA Academy group (17%); there were no
significant differences in minority representation. Just 17% of the
MnATCTC had achieved full performance level (FPL) certification as of

June 1995, compared with 69% of the FAA Academy group. However, time to
FPL and attrition rates were similar. MnATCTC graduates were rated
significantly lower than FAA Academy graduates by supervisors in
teamwork, technical skill, technical knowledge, and overall potential
to succeed in the ATCS occupation. Cost analysis found that MnATCTC
per-hire costs would be competitive with FAA Academy costs-per-student
by FY1998-2000. Cost-benefit analysis found that the MnATCTC would
begin returning about \$1.45 in avoided costs and savings to the agency
for every \$1 invested by FY1998-2001, even with continued FAA financial
support. However, with a maximum capacity of about 100 graduates per
year, the MnATCTC can provide only a small fraction of the FAA
controller workforce. In summary, this evaluation found that the
MnATCTC program appears to be achieving its stated goals.

AN (1) AD-A355 135/XAG

**FG (2) 010200
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

**TI (6) Recovery of the FAA Air Traffic Control Specialist Workforce,
1981-1992.**

DN (9) Final rept.

AU (10) Broach, Dana

RD (11) Aug 1998

PG (12) 62 Pages

RN (18) DOT/FAA/AM-98/23
XH-XD

RC (20) Unclassified report

DE (23) *JOB TRAINING, *WORK, *AIR TRAFFIC CONTROLLERS
TEST AND EVALUATION, DATA BASES, CONTROL, JOBS, ENVIRONMENTS,
ORGANIZATIONS, PREDICTIONS, RECRUITING, AIR TRAFFIC CONTROL
SYSTEMS,

SURVEYS, PATTERNS, FOCUSING, PERCEPTION, APTITUDE TESTS, PAPER

AB (27) The Federal Aviation Administration was confronted in 1981 with the
challenge of rebuilding its core, technical, and highly-trained air
traffic control specialist (ATCS) workforce following the PATCO strike.
From late 1981 through mid-1992, the FAA rebuilt this critical
workforce through a large-scale testing, screening and training
program. By mid-1992, recovery of the controller workforce was
complete, and it was no longer necessary for the FAA to conduct a
large-scale hiring program. The six papers presented in this report
represent the first major retrospective analysis of the complete data

set describing the recovery of the FAA's en route and terminal ATCS workforce following the 1981 controller strike. The first paper describes the personnel processes, focusing on recruitment and hiring programs for the en route and terminal options. The second paper presents a detailed description of the aptitude test battery used to evaluate over 400,000 applicants between 1981 and 1992. The third paper offers a definitive statistical portrait of the FAA Academy Screening programs as predictors of field training outcomes. On-the-job training (OJT) programs in en route and terminal facilities are described in the fourth paper. These four papers, taken together, provide a definitive description of the processes used to recruit, test, screen, and train persons for the ATCS occupation between 1981 and 1992. The fifth paper draws on FAA organizational survey data to describe controller perceptions of the organizational climate in which the workforce recovery occurred. The sixth paper analyzes current controller workforce demographics and technological trends in air traffic control to identify potential areas of future research.

AN (1) AD-A359 349/XAG

FG (2) 010600

040100

081200

CA (5) FEDERAL AVIATION ADMINISTRATION ATLANTIC CITY NJ AIRPORT AND AIRCRAFT

SAFETY RESEARCH AND DEVELOPMENT

TI (6) Snow and Ice Particle Sizes and Mass Concentrations at Altitudes Up to 9 km (30,000 ft)

DN (9) Final rept.

AU (10) Jeck, Richard K.

RD (11) Aug 1998

PG (12) 93 Pages

RS (14) AAR-421

RN (18) DOT/FAA/AR-97/66

XH-DOT/FAA/AR

RC (20) Unclassified report

DE (23) *ICE FORMATION, *AVIATION SAFETY, *CLOUD PHYSICS

DATA BASES, AIRCRAFT, CRYSTALS, PARTICLES, SNOW, HIGH ALTITUDE, STORMS,

COMPUTER APPLICATIONS, CONVECTION(ATMOSPHERIC), STRATUS CLOUDS

ID (25) AIRCRAFT ICING, ICE PARTICLES

AB (27) About 7600 nautical miles (nm) (14,000 km) of select ice particle measurements over the United States have been compiled into a single, computerized database for use in characterizing ice crystal and

snowflake (generally termed ice particle) size distributions and mass concentrations at flight altitudes. Data are from 50 research flights by six agencies in eight flight research projects using Particle Measuring Systems' one-dimensional (1-D) and two-dimensional (2-D) particle sizing probes. Primary recorded variables are average particle size distributions in the range 0.1 to 10 μm from each of 1625 microphysically uniform cloud intervals or other convenient distances in wintertime clouds, snowstorms, cirrus, and other high-altitude clouds. The findings are that, generally, the largest particles and the greatest concentrations of total ice particle mass (TIPM) are confined to altitudes below 20,000 ft (6 km). There, particles of 10 μm in maximum dimension and TIPM's up to about 3 g/m^3 may be found. Above 20,000 ft, particles are smaller than 2 μm and TIPM's are less than 0.2 g/m^3 in the cirrus and the upper reaches of deep winter storm clouds that are found at these levels. Exceptions are thunderstorm anvil clouds where 10 μm particles and TIPM's of at least 1 g/m^3 can be found up to at least 30,000 ft (9 km). Anvil clouds and stratiform clouds associated with warm season mesoscale convective systems have provided some of the largest TIPM's, the greatest particle concentrations, and the largest particle sizes at high and mid altitudes, respectively. In contrast to supercooled cloud droplets where the largest liquid water (mass) concentrations are confined to short distances of 3 nm or less in convective clouds, the largest average TIPM's in glaciated clouds have been found in layer clouds over distances up to 30 nm.

AN (1) AD-A359 840/XAG

FG (2) 010500

170703

120500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Interim Runway Visual Range (RVR)/Automated Surface Observing System (ASOS) Interface Regression Operational Test and Evaluation (OT and E) Report

DN (9) Technical note

AU (10) Benner, William

McKinney, Michael

Jones, Michael

RD (11) Aug 1998

PG (12) 50 Pages

RS (14) DOT/FAA/CT-TN98/14

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report
NO (21) Prepared in collaboration with Raytheon Service Co., Burlington, MA.
DE (23) *SOFTWARE ENGINEERING, *RUNWAYS, *NAVIGATIONAL AIDS
TEST AND EVALUATION, OPERATIONAL EFFECTIVENESS,
SYNCHRONIZATION(ELECTRONICS), DATA DISPLAYS, COMPUTER PROGRAM
VERIFICATION, SCREENS(DISPLAYS)
ID (25) RVR(RUNWAY VISUAL RANGE), ASOS(AUTOMATED SURFACE OBSERVING
SYSTEM)

AB (27) This report details results of a regression test performed on the Interim Runway Visual Range (RVR)/Automated Surface Observing System (ASOS) interface. Testing was conducted from January 21 through 23, 1997, at Memphis International Airport (MEM). Testing was intended to determine if modifications to the interface corrected problems observed during initial testing October of 1996. Testing also was designed to determine if Interim RVR/ASOS software performance enhancements operated in accordance with user needs and functions. Problems observed during the initial test included the following: (1) ASOS Display Screen Mismatch with RVR product, (2) Interim RVR/ASOS Interface Boot Failure, (3) Interim RVR/ASOS Software Lock-Up, (4) New Generation RVR Output Rate and Interim RVR/ASOS Interface Software synchronization, (5) Phantom RVR products with RVR Configuration Modifications, and (6) False RVR products during RVR Sensor Calibration. Of the problems discovered during initial testing, nine were resolved as a result of modifications to the Interim RVR/ASOS Interface and the ASOS. It was determined that a maintenance procedure could be used to correct the remaining problem. Correction and resolution of the problems identified during initial Operational Test and Evaluation (OT&E) indicate the Interim RVR/ASOS Interface and ASOS RVR functions are suitable for use in the field from an operational perspective. Proper performance demonstrated by the Interim RVR/ASOS Interface self-restart and illegal entry prevention features also indicate the Interim RVR/ASOS Interface can be used with a minimum of maintenance actions by field technicians. These developments suggest the Interim RVR/ASOS Interface is prepared for use at designated Long-Line RVR sites. As a result, ACT-320 recommends deployment of the interface at sites designated by the National Weather Service (NWS) and Federal Aviation Administration (FAA).

AN (1) AD-A359 841/XAG
FG (2) 010500
170703
120500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Interim Runway Visual Range (RVR) Automated Surface Observing System (ASOS) Interface Operational Test and Evaluation (OT&E) Regression Test
Number 2 Report

DN (9) Technical note
AU (10) Benner, William
McKinney, Michael
Jones, Michael

RD (11) Aug 1998
PG (12) 34 Pages
RS (14) DOT/FAA/CT-TN98/7
RN (18) XH-DOT/FAA/CT
RC (20) Unclassified report

NO (21) Prepared in collaboration with Raytheon Service Co., Burlington, MA.
DE (23) *SOFTWARE ENGINEERING, *NAVIGATION COMPUTERS, *RUNWAYS
TEST AND EVALUATION, OPERATIONAL EFFECTIVENESS, DATA DISPLAYS,
COMPUTER
PROGRAM VERIFICATION, SCREENS(DISPLAYS)

ID (25) ASOS(AUTOMATED SURFACE OBSERVING SYSTEM), RVR(RUNWAY VISUAL
RANGE)

AB (27) This report discusses results of a regression test performed on the Interim Runway Visual Range (RVR)/Automated Surface Observing System (ASOS) interface. Testing was conducted from September 29, 1997, to October 13, 1997, at Memphis International Airport. This was the second regression test performed on the interface following modifications to the RVR-ASOS executable, which operates on the Hewlett Packard Palmtop Personal Computer (HP Palmtop PC). Regression Test 2 was primarily intended to determine if the HP Palmtop RVR-ASOS executable would accurately calculate Long-Line RVR data during various configurations and combinations of New Generation RVR data. Proper ingestion and Display of Long-Line RVR products were also confirmed on ASOS display screens. Test results indicate the custom HP palmtop software accurately calculated Long-Line RVR readings during the conducted test scenarios. Proper ingestion and display of Long-Line RVR data were confirmed on the ASOS. Results also indicate several problems found during previous OT&E tests were corrected from software modifications to the HP Palmtop and the ASOS. These results suggest the Interim RVR/ASOS Interface is suitable for field deployment and usage. Despite the performance improvements observed, four problems were documented during testing. Three problems related to operation of the ASOS and one concerned operation of the HP Palmtop. Since it is anticipated the observed problems will not impact normal operation of the Interim RVR/ASOS Interface or ASOS, ACT-320 recommends deployment at locations

designated by the Federal Aviation Administration (FAA) and the National Weather Service (NWS).

AN (1) AD-A368 670/XAG

FG (2) 050800
050900

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Air Traffic Control Specialist Age and Cognitive Test Performance

AU (10) Heil, M. C.

RD (11) Aug 1998

PG (12) 20 Pages

RN (18) DOT/FAA/AM-98/23
XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *COGNITION, *AIR TRAFFIC CONTROLLERS
MEMORY(PSYCHOLOGY), REASONING, REGRESSION ANALYSIS, MENTAL
ABILITY,

PERCEPTION(PSYCHOLOGY), AWARENESS

AB (27) Researchers have explored the issue of air traffic control specialist (ATCS) age and performance many times over the past few decades. These researchers have consistently found a negative relationship between the age of Air ATCSs and both training success and ratings of job performance. A recent study (Heil, 1999) found a curvilinear relationship between ATCS age and performance on a computerized simulation of air traffic situations, with performance decreasing for people in their mid 40s. Some researchers (Heil, 1999; Schroeder, Broach, & Farmer, 1997) have speculated that these relationships maybe due to a decline in cognitive ability with age. The purpose of the current study is to investigate the relationship between age and performance on tests of cognitive ability for incumbent ATCSs. As part of a concurrent validation study, 1083 incumbent ATCSs from 12 enroute centers took a newly developed air traffic control selection test. The tests included in the 6 hour battery were developed to measure the knowledge, skills, abilities, and other characteristics (KSAOs) relevant to the ATCS job. Some of the KSAOs measured by the battery include: ability to prioritize, situational awareness, planning, execution, thinking ahead, short-term memory, reasoning, decisiveness, concentration, perceptual speed and accuracy, mathematical reasoning, and ability to deal with dynamic visual movement. The relationship between current age and performance on these cognitive tests was compared using regression analysis and analysis of variance procedures.

The results of these analyses suggest some age-related decline in those cognitive abilities that are most important to successful job performance.

AN (1) AD-A353 962/XAG

FG (2) 170703
250200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) An Acoustic Analysis of ATC Communication.

DN (9) Final rept.

AU (10) Prinzo, O. V.

Lieberman, Philip

RD (11) Jul 1998

PG (12) 27 Pages

RN (18) DOT/FAA/AM-98/20
XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COMMUNICATION AND RADIO
SYSTEMS,

*ACOUSTICS

PRODUCTION, COGNITION, STRESS(PSYCHOLOGY), PILOTS, CONTROL
CENTERS,

SPEECH, MESSAGE PROCESSING, AIR TRAFFIC CONTROLLERS, SOUND
ANALYZERS,

VERBAL BEHAVIOR, EMOTIONS

AB (27) Radio communication is the primary means by which pilots and air traffic control specialists (ATCSs) transmit verbal messages between each other. Controllers learn to speak a particular grammar using a pre-defined cadence during their initial training at the FAA Academy and at their assigned air traffic control facility. In addition to the verbal message transmitted orally, the receiver also receives extralinguistic information conveyed by the speaker. Through additional training and experience, controllers learn to conceal potential emotional content from their speech. While researchers have not yet identified consistently reliable quantifiable factors, several aspects of speech production have been shown to be related to physiological and task-induced stress.

AN (1) AD-A355 072/XAG

FG (2) 010300

070200

110300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Effects of Concentrated Hydrochloric Acid Spills on Aircraft Aluminum Skin

DN (9) Technical note

AU (10) Speitel, Louise C.

RD (11) Jul 1998

PG (12) 13 Pages

RS (14) DOT/FAA/AR-TN-97/108

RN (18) XH-DOT/FAA/AR

RC (20) Unclassified report

DE (23) *AIRCRAFT, *DAMAGE, *ALUMINUM, *SKIN(STRUCTURAL), *SPILLING, *HYDROCHLORIC ACID

EXPERIMENTAL DATA, CORROSION, STRUCTURAL PROPERTIES, RESISTANCE, FAILURE, STRENGTH(MECHANICS), SURFACES, RIVETS, CATASTROPHIC CONDITIONS, CONCENTRATION(CHEMISTRY), HAZARDOUS MATERIALS,

CHEMICAL

ATTACK(DEGRADATION), EPOXY COATINGS

ID (25) ACID SPILL, AIRCRAFT SKIN, STRUCTURAL RIB STRENGTH, DOT(DEPARTMENT OF TRANSPORTATION)

AB (27) This document describes the tests conducted to evaluate the effects of a spill of a strong corrosive acid such as hydrochloric acid (HCl) on aircraft interior skin and to determine the time required for a spill of Department of Transportation (DOT) allowable volumes and concentrations to cause catastrophic failure. Test data indicate that the epoxy coated interior aluminum skin is resistant to acid attack. The acid reacted vigorously with scratched skin surfaces, creating a wide hole in the skin along the scratch line. Test data also indicate that a spill of concentrated HCl can eat completely through the rivets and ribs and may result in a significant loss of structural rib strength.

AN (1) AD-A355 102/XAG

FG (2) 170703

200100

250200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) An Acoustic Analysis of ATC Communication

DN (9) Final rept.

AU (10) Prinzo, O. V.

Lieberman, P.

Pickett, E.

RD (11) Jul 1998

PG (12) 27 Pages

RS (14) DOT/FAA/AM-98/20

CT (15) 95-G-034

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *COMMUNICATION AND RADIO SYSTEMS, *AIR TRAFFIC CONTROLLERS, *ACOUSTIC

COMMUNICATIONS

SCENARIOS, CONTROL, SIMULATION, DENSITY, VOLUME, CONTRAST, AIRCRAFT,

TRAFFIC, LIGHT, RATES, AIR TRAFFIC CONTROL SYSTEMS, RESPONSE, WORK STATIONS, WORDS(LANGUAGE), SPEECH ANALYSIS, SPEECH, WORKLOAD, AUTOMATIC, INDICATORS, SOUND ANALYZERS

AB (27) This report consists of an acoustic analysis of air traffic control (ATC) communications. Air traffic control specialists (ATCS) from a TRACON facility participated in the simulation study. Each ATCS worked light and heavy traffic density scenarios for 2 feeders and 1 final sector. All communications were audio recorded and transcribed verbatim by a retired ATCS. Workload was determined by the number of aircraft under positive control when the ATCS initiated a transmission. Utterances were selected to achieve maximal workload contrast. For each participant, the 5 lowest workload utterances from the Light version of the scenario (simulating that participant's normal work station) and the 5 highest workload utterances from the Heavy version of the scenario (simulating a work station unfamiliar to the participant) were identified and digitized. For all participants, speaking rate (syllables/second), pause frequency (number of pauses/number of words), and pause duration (duration of pauses/number of words) were generated from the selected utterances using the BLISS speech analysis system (Lieberman and Blumstein, 1988). The results indicate that ATCSs tended to pause more frequently and for greater duration under a light workload condition. The hesitations found in their speech may reflect a shift between a more cognitive "thinking" response mode in light traffic situations where ATCSs know that they have more time to respond and a more automatic mode, which allows them to respond to the increased pace induced by higher traffic loads. In conclusion, it appears that hesitation in speech may be a potential indicator of workload. Despite its highly speaker-dependent nature, hesitation

pauses may be a useful indicator of an ATCS's responding in a cognitive, rather than in an automatic mode.

AN (1) AD-A355 109/XAG

FG (2) 010305

130400

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Cargo Compartment Fire Protection in Large Commercial Transport Aircraft

DN (9) Technical Note.

AU (10) Blake, David

Marker, Timothy

Hill, Richard

Reinhardt, John

Sarkos, Constantine

RD (11) Jul 1998

PG (12) 25 Pages

RS (14) DOT/FAA/AR-TN98/32

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *COMMERCIAL AIRCRAFT, *FIRE PROTECTION, *AVIATION SAFETY, *TRANSPORT

AIRCRAFT

CARGO VEHICLES, AEROSOLS, SCALE MODELS, THREATS, EXPLOSIONS, TEST METHODS, COMPARTMENTS, OXYGEN, REPLACEMENT, CANISTERS, FIRE SUPPRESSION, FIREPOWER, FIRE EXTINGUISHING AGENTS, DECOMPOSITION, REPRODUCIBILITY, PASSENGERS, WATER SUPPLIES, FLUORINATED

HYDROCARBONS,

MIST, AIRCRAFT CABINS

ID (25) HFC-125 AIRCRAFT, HALON 1301, GASEOUS HYDROFLUOROCARBON

AB (27) This report describes recent research by the Federal Aviation Administration (FAA) related to cargo compartment fire protection in large transport aircraft. A gaseous hydrofluorocarbon, HFC-125, was compared to Halon 1301 in terms of fire suppression effectiveness and agent decomposition levels in the cargo compartment and passenger cabin during full-scale tests involving a bulk-loaded cargo fire. Also, a zoned water mist system was designed and evaluated against a bulk-loaded cargo fire. An exploding aerosol can simulator is being developed to provide a repeatable fire threat for evaluation of new halon replacement agents. The potential severity of an exploding aerosol can inside a cargo compartment and the effectiveness of Halon

1301 inserting was demonstrated. Tests were also conducted to determine the effectiveness of Halon 1301 against a cargo fire involving oxygen canisters. Finally, HFC-125 was evaluated for use as a simulant for Halon 1301 during cargo compartment approval testing to demonstrate compliance with applicable FAA regulations.

AN (1) AD-A350 376/XAG

FG (2) 170703

170900

250100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Traffic Information Service (TIS) Developmental/Operational Test and Evaluation (DT&E and OT&E) Final Test Report

DN (9) Final test rept.

AU (10) McNeil, Michael

Sharkey, Robert

RD (11) Jun 1998

PG (12) 145 Pages

RS (14) DOT/FAA/CT-TN98/10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRPORT RADAR SYSTEMS, *SYSTEMS ANALYSIS, *DATA LINKS, *AIR TRAFFIC

TEST AND EVALUATION, DATA PROCESSING, GROUND LEVEL, DETECTORS, OPERATIONAL EFFECTIVENESS, REGIONS, DISPLAY SYSTEMS, AIR SPACE, AUTOMATIC, RADAR BEACONS

ID (25) TIS(TRAFFIC INFORMATION SERVICE), DT&E(DEVELOPMENTAL TEST AND EVALUATION), TCAS(TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM), MODE S

BEACON RADAR SYSTEM, MODE S(MODE SELECT)

AB (27) The Federal Aviation Administration (FAA) Traffic Information Service (TIS) Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E) Final Test Report is prepared by the Mode Select (Mode S) Test Group of the Surveillance Branch ACT-310. It provides the detailed analysis, results, the final conclusions, and recommendations drawn from the DT&E and OT&E of the TIS data link service for the Mode S Beacon Radar System. The purpose of the TIS data link function is intended to improve the safety and efficiency of "see-and-avoid" flight by providing automatic display to the pilot of nearby traffic and warnings of any potentially threatening conditions. The source of TIS information is the file of aircraft tracks maintained by the ground Mode S sensor providing coverage for a region of airspace.

AN (1) AD-A353 970/XAG
FG (2) 050800
050900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) The Development and Evaluation of a Behaviorally Based Rating Form for
the Assessment of En Route Air Traffic Controller Performance
DN (9) Technical note
AU (10) Vardaman, Jennifer J.
Stein, Earl S.
RD (11) Jun 1998
PG (12) 65 Pages
RS (14) DOT/FAA/CT-TN98/5
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROLLERS, *PERFORMANCE APPRAISALS
SIMULATION, PERFORMANCE TESTS, EFFICIENCY, AIR TRAFFIC CONTROL
SYSTEMS,
BEHAVIOR, PERSONALITY
ID (25) SATCS(SUPERVISORY AIR TRAFFIC CONTROL SPECIALISTS)
AB (27) This project expanded and evaluated the performance evaluation method
developed by Sollenberger, Stein, and Gromelski (1997), a Terminal
Radar Approach Control rating form and training package designed to
better assess air traffic controller performance. The form is a
research-oriented testing and assessment tool designed to measure the
efficacy of new air traffic control (ATC) systems, system enhancements,
and operational procedures in simulation research. The rating form used
in the present study focused on observable behaviors that supervisory
air traffic control specialists (SATCSs) use to make behaviorally based
ratings of en route controller performance. Researchers also
investigated the relationship between performance ratings and
personality traits from the Sixteen Personality Factor personality
inventory.

AN (1) AD-A353 978/XAG
FG (2) 050200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Human Factors Technical Writer's Guide.
DN (9) Technical rept.
AU (10) Snyder, Michael D.

Bryant, David J.
Dunn, Jean
Stein, Earl S.
RD (11) Jun 1998
PG (12) 87 Pages
RS (14) ACT-530
CT (15) DTFA03-94-C0012
RN (18) DOT/FAA/CT-TN98/2
XH-XD
RC (20) Unclassified report
DE (23) *HUMAN FACTORS ENGINEERING, *STANDARDIZATION, *TECHNICAL
WRITING
SIMULATION, EDUCATION, TEAMS(PERSONNEL), AERONAUTICS,
CONSTRUCTION,
DOCUMENTS, WORDS(LANGUAGE), HANDBOOKS, WRITING, DWELL TIME
AB (27) The Program Directorate for Aviation Simulation and Human Factors
(ACT-500) of the Federal Aviation Administration William J. Hughes
Technical Center determined that there should be a standardized method
to create technical documents. The Human Factors Branch (ACT-530) was
tasked to develop this document. They decided that standardizing
technical documents should not only dwell on developing the document
but teaching basic writing techniques to make all ACT-500 documents
consistent. A small team was selected from ACT-530 support personnel to
develop a handbook and teach the basics of technical writing. The
handbook includes four distinct sections: Organization, General Writing
Concerns, Sentence Construction, and Special Topics. The team also
developed a slide presentation that tracks the handbook very closely.
This document is the published version of the handbook.

AN (1) AD-A355 165/XAG
FG (2) 010305
131200
210400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) A Review of the Flammability Hazard of Jet A Fuel Vapor in Civil
Transport Aircraft Fuel Tanks.
DN (9) Final rept.
RD (11) Jun 1998
PG (12) 62 Pages
RS (14) DOT/FAA/AR-98/26
RN (18) XH-XD
RC (20) Unclassified report

DE (23) *HAZARDS, *FUEL TANKS, *TRANSPORT AIRCRAFT, *JET ENGINE FUELS, *FIRE

PREVENTION

TRANSPORTATION, VAPORS, REPORTS, COMBUSTION, FUELS, SAFETY, INFLIGHT,

CALIFORNIA, AVIATION FUELS, FIRES, SPECIALISTS, FLAMMABILITY

AB (27) This report documents the findings of a Fuel Flammability Task Group made up of recognized fuel and combustion specialists investigating the flammability and explosiveness of fuel within an aircraft fuel tank.

The task group reviewed all available reports on the subject and met and discussed the data with technical experts from Boeing Commercial Airplane Co., California Institute of Technology, and the National Transportation Safety Board. The scope of the report includes jet fuel definitions and specifications, jet fuel flammability data, influences of various factors on fuel flammability, and predictive analyses and models for flammability. The report discusses the impact of this knowledge on the needs for in-flight fuel fire prevention.

AN (1) AD-A350 504/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) The Combination of Flight Count and Control Time as a New Metric of Air Traffic Control Activity

DN (9) Final rept.

AU (10) Mills, Scott H.

RD (11) May 1998

PG (12) 15 Pages

RN (18) DOT/FAA/AM-98/15

XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC

MEASUREMENT, AIRCRAFT, COUNTING METHODS, AIR TRAFFIC CONTROL SYSTEMS,

TIME, FLIGHT, AIR SPACE, WORKLOAD

ID (25) *AAI(AIRCRAFT ACTIVITY INDEX), *FLIGHT COUNT, ATC(AIR TRAFFIC CONTROL)

AB (27) The exploration of measures of airspace activity is useful in a number of significant ways, including the establishment of baseline air traffic control (ATC) measures and the development of tools and procedures for airspace management. This report introduces a new metric

of ATC activity that combines two existing measures (flight count and the time aircraft are under control). The Aircraft Activity Index (AAI) is sensitive to changes in both flight count and flight length, and therefore is a superior measure for comparing aircraft activity between two epochs of time. The AAI was applied to data from 10 days of System Analysis Recordings obtained from the Seattle Air Route Control Center. The advantages of the AAI were most apparent when different aircraft types consistently had different mean flight lengths. Possible uses of the AAI and other ATC measures for the evaluation of new systems and procedures are discussed.

AN (1) AD-A350 509/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

OFFICE OF AVIATION RESEARCH

TI (6) Vertical Drop Test of a Beechcraft 1900C Airliner

DN (9) Final rept. Jul-Nov 95

AU (10) McGuire, Robert J.

Vu, Tong

RD (11) May 1998

PG (12) 83 Pages

RS (14) AAR-431

RN (18) DOT/FAA/AR-96/119

XH-XD

RC (20) Unclassified report

DE (23) *DAMAGE, *FUSELAGES, *CRASHES, *AIRCRAFT CABINS

TEST AND EVALUATION, SURVIVABILITY, IMPACT TESTS, DROP TESTS,

AIRFRAMES, RESTRAINT, AVIATION SAFETY, AIRCRAFT SEATS

ID (25) *BEEHCRAFT 1900C, COMMUTER CATEGORY AIRCRAFT, VERTICAL IMPACT

AB (27) A commuter category Beechcraft 1900C airliner was subjected to a vertical impact drop test at the FAA William J. Hughes Technical Center, Atlantic City International Airport, New Jersey. The purpose of this test was to measure the impact response of the fuselage, cabin floor, cabin furnishings (including standard and modified seats), and anthropomorphic test dummies. The test was conducted to simulate the vertical velocity component of a severe but survivable crash impact. A low-wing, 19-passenger fuselage was dropped from a height of 11' 2" resulting in a vertical impact velocity of 26.8 ft/sec. The airframe was configured to simulate a typical flight condition, including seats (normal and experimental), simulated occupants, and cargo. For the test the wings were removed; the vertical and horizontal stabilizers were removed; the landing gear was removed; and the pilot and copilot seats

were not installed. The data collected in the test and future tests will supplement the existing basis for improved seat and restraint systems for commuter category 14 Code of Federal Regulation (CFR) Part 23 airplanes. The test article was fully instrumented with accelerometers and load cells. Seventy-nine data channels were recorded. Results of the test are as follows: - the fuselage experienced an impact in the range of 149-160 g's, with an impact pulse duration of 9-10 milliseconds - the simulated occupants experienced g levels in the range of 32-45 g's with a pulse duration of 44-61 milliseconds - the test was considered to be a severe but definitely survivable impact - the fuselage structure maintained a habitable environment during and after the impact - the seat tracks remained attached to the fuselage along the entire length of the fuselage - all standard seats remained in their tracks after the impact - all exits remained operable

AN (1) AD-A350 523/XAG

FG (2) 170703

250400

010500

250200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) An Analysis of Voice Communication in a Simulated Approach Control Environment

DN (9) Final rept.

AU (10) Prinzo, O. V.

RD (11) May 1998

PG (12) 30 Pages

RS (14) DOT/FAA/AM-98/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *VOICE COMMUNICATIONS, *AIR TRAFFIC CONTROL TERMINAL

AREAS

SPEECH RECOGNITION, SPEECH ANALYSIS, RADIO TRANSMISSION, RADAR

LANDING

CONTROL

ID (25) TRACON(TERMINAL RADAR APPROACH CONTROL)

AB (27) This report consists of an analysis of simulated terminal radar approach control (TRACON) air traffic control communications.

Twenty-four full performance level air traffic controllers (FPLATC)

from 2 TRACON facilities participated in the simulation study. Each controller worked 2 light- and 2 heavy-traffic density scenarios for feeder and final sectors. All communications were audio recorded and transcribed verbatim by a retired FPLATC. Once transcribed, transmissions were parsed into communication elements. Each communication element was assigned a speech act category (e. g., address, instruction, request, or advisory), an aviation topic (e.g., altitude, heading, speed) and then coded for irregularities (e.g., grouping numbers together when they should be spoken sequentially, or omitting, substituting, or adding words contrary to required phraseology) (ATSAT, Prinzo et al., 1995). The simulated communications were compared to an analysis performed on audiotapes from the same TRACON facilities. Percentages in 3 speech act categories were comparable (Instruction, 55% versus 51%; Address; 14% versus 26%; Advisory, 24% versus 18%). Detailed analyses revealed that, although there were fewer irregular communications produced during simulation, the distributions of those communication irregularities were very much the same, with the exception of aircraft call sign. The differences in those distributions were attributed to the voice recognition system; it could not recognize a call sign spoken sequentially and then restated in grouped form.

AN (1) AD-A350 596/XAG

FG (2) 010500

040200

050200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Final Report for Automated Surface Observing System (ASOS) Controller Equipment (ACE) Operational Test and Evaluation

AU (10) Horan, Colleen

Melillo, Michael R.

Peio, Karen J.

Nuzman, Edward F.

Vicente, James P.

RD (11) May 1998

PG (12) 69 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *INFORMATION TRANSFER, *METEOROLOGICAL DATA, *AIRPORT CONTROL TOWERS,

*DISPLAY SYSTEMS

TEST AND EVALUATION, GLOBAL, AUTOMATION, WEATHER, AIR TRAFFIC CONTROL SYSTEMS, OPERATIONAL EFFECTIVENESS, GROUND CONTROLLED APPROACH RADAR, INTERNATIONAL AIRPORTS, AIRPORTS, TEXAS, URBAN AREAS, OKLAHOMA ID (25) ASOS(AUTOMATED SERVICE OBSERVING SYSTEM), ACE(ASOS CONTROLLER EQUIPMENT), TRACON(TERMINAL RADAR APPROACH CONTROL) AB (27) The Automated Surface Observing System (ASOS) Controller Equipment (ACE) system is a display system that provides weather products from the ASOS and other weather product systems to the Federal Aviation Administration (FAA) Air Traffic Control Towers (ATCTs), Terminal Radar Approach Control (TRACON), and other selected locations. Operational Test and Evaluation (OT&E) of the ACE was conducted in four phases, commencing at the FAA William J. Hughes Technical Center in July 1995 and concluding at the Will Rogers World Airport, Oklahoma City Oklahoma (OKC) and Dallas/Ft. Worth International Airport, Irving, Texas (DFW), in April 1997. The purpose of the OT&E was to evaluate the performance of the ACE display system. This final report describes the results of OT&E testing conducted on the ACE.

AN (1) AD-A350 717/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST
TI (6) The Relationship of Sector Characteristics to Operational Errors
DN (9) Final rept.
AU (10) Rodgers, Mark D.
Mogford, Richard H.
Mogford, Leslye S.
RD (11) May 1998
PG (12) 66 Pages
CT (15) DTFA02-95-P-35434
RN (18) DOT/FAA/AM-98/14 XH-XD
RC (20) Unclassified report
NO (21) Prepared in collaboration with William J. Hughes Technical Center, Atlantic City, NJ and Rigel Associates, Marmora, NJ.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIR SPACE REGRESSION ANALYSIS, AIR NAVIGATION, ERROR ANALYSIS, AVIATION SAFETY,
AIR TRAFFIC, DISCRIMINATE ANALYSIS
AB (27) An exploratory study was conducted on the relationship of air traffic

control (ATC) complexity factors to operational errors (OEs). This consisted of a detailed examination of OE data from 1992 through 1995 from the Atlanta en route center. The Systematic Air Traffic Operations Research Initiative (SATORI) system was used to collect data for the analysis. Sectors were categorized into zero-, low-, and high-error groups. Fifteen sector and traffic flow variables had statistically significant correlations with OE frequency. Four variables were higher for the high-error group as compared to the zero-error group. Sector size was smaller for the high-error group as compared to the combined zero- and low-error categories. A significant multiple correlation was found between overall OE rate and a subset of the ATC complexity measures. The data were also analyzed to define relationships between the complexity measures and controller situational awareness (SA) at the time of the OE. The only statistically significant difference between OEs with and without SA was for horizontal separation. In addition, high-error sectors were characterized by low SA for errors. Certain sector and traffic flow characteristics were associated with these high-error sectors, suggesting that these factors may negatively affect SA. It was concluded that the results demonstrated a relationship between sector complexity and OE rate. Such findings, if extended, could assist with traffic management, sector design activities, and the development of decision-support systems.

AN (1) AD-A345 103/XAG
FG (2) 111100
131200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Fire Testing of Ethanol-Based Hand Cleaner
DN (9) Final rept.
AU (10) Marker, Timothy R.
Do, Dung
RD (11) Apr 1998
PG (12) 13 Pages
RS (14) DOT/FAA/AR-TN-98/15
RN (18) XH-FAA
RC (20) Unclassified report
DE (23) *CLEANING COMPOUNDS, *HANDS, *ETHANOLS, *FIRE SAFETY TEST AND EVALUATION, RADIATION, COMMERCIAL AIRCRAFT, SCALE MODELS, FLASH POINT, GELS, OVENS, TOILET FACILITIES
ID (25) FSDO(FLIGHT STANDARDS DISTRICT OFFICE)
AB (27) A variety of laboratory and full-scale fire tests were conducted on an ethanol-based gel-type hand cleaner currently used in commercial

aircraft lavatories. The waterless-type hand cleaner has a relatively low flash point, raising concern over its fire safety when in use in the galley area of commercial transport aircraft where radiant ovens are often located. The results indicated the gel hand cleaner is often difficult to ignite and can be extinguished relatively easily.

AN (1) AD-A346 043/XAG

FG (2) 010600

050800

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) GPS Design Considerations: Displaying Nearest Airport Information

DN (9) Final rept.

AU (10) Williams, Kevin W.

RD (11) Apr 1998

PG (12) 18 Pages

RN (18) DOT/FAA/AM-98/12

XH-XD

RC (20) Unclassified report

DE (23) *APPLIED PSYCHOLOGY, *FLIGHT SIMULATION

DECISION MAKING, PILOTS, ORIENTATION(DIRECTION), HUMAN FACTORS

ENGINEERING, DISPLAY SYSTEMS, GLOBAL POSITIONING SYSTEM, ERRORS,

CIVIL

AVIATION, MAPS, AIRPORTS

AB (27) Thirty-six participants were tested in a flight simulator on their ability to orient toward the nearest airport, based on the manner in which information was presented on a global positioning system (GPS) display. Results indicated that use of the tabular, text-only format normally found on such displays was significantly slower and less accurate than either a map display of nearest airport information or a text display that included an orientation symbol. In addition, it was found that pilots tended to ignore information available from the heading indicator, and instead, focused solely on the GPS display to perform the task. Discussion of the results includes the need to support pilot decision-making through interface design and the development of design guidelines for GPS displays.

AN (1) AD-A349 606/XAG

FG (2) 131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Initial Development of an Exploding Aerosol Can Simulator

AU (10) Marker, Timothy

RD (11) Apr 1998

PG (12) 16 Pages

RS (14) DOT/FAA/AR-TN97/103

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AEROSOLS, *CARGO, *FIRE HAZARDS

SIMULATORS, HIGH RATE, QUANTITY, EXPLOSIONS, TEST METHODS, RUPTURE,

PROPELLANTS, PULSES, CYLINDRICAL BODIES, RELEASE, PRESSURE VESSELS,

IGNITION, STORAGE, FLAMMABILITY

ID (25) *AEROSOL CONTAINERS, *AEROSOL CANS

AB (27) A device was constructed to simulate an exploding aerosol can. The device consisted of a cylindrical pressure vessel for storage of flammable propellants and base product and a high-rate discharge (HRD) valve for quick release of the constituents. Simulator tests were conducted using representative constituents and propellant quantities for comparison with actual cans heated to the point of rupture and ignition. This report describes the tests conducted with the simulator in unconfined spaces, a B-727 cargo compartment, and an LD-3 Unit Loading Device (ULD). Subsequent work is planned with the aim of matching the pressure pulse produced by the exploding aerosol can simulator with that measured during an overheated aerosol can explosion.

AN (1) AD-A350 935/XAG

FG (2) 010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR

FOR RESEARCH AND ACQUISITIONS

TI (6) An Acoustic Emission Test for Aircraft Halon 1301 Fire Extinguisher Bottles

DN (9) Final rept.

AU (10) Beattie, A. G.

RD (11) Apr 1998

PG (12) 20 Pages

CT (15) DTFA03-95-X-90002

RN (18) DOT/FAA/AR-97/9

DOT/FAA/AAR-433

XH-XD

RC (20) Unclassified report
DE (23) *FIRE EXTINGUISHERS
COMMERCIAL AIRCRAFT, NONDESTRUCTIVE TESTING, AIRCRAFT FIRES,
ACOUSTIC
EMISSIONS, STRUCTURAL INTEGRITY
ID (25) HALON 1301

AB (27) An acoustic emission test for aircraft Halon 1301 bottles has been developed, a prototype acoustic emission test system constructed, and over 200 used bottles tested at the repair facilities of the two manufacturers of these bottles. The system monitors a bottle with six acoustic sensors while the pressure of the bottle is raised by heating it in an oven. The sensors are held in position, with a fixed relationship between them, by a special fixture. This fixture is designed to fit spheres with diameters between 5 and 16 inches. Results of the tests on used bottles indicate that over 95 percent of the bottles showed no indication of significant defects. The rest had some indication of flaws or corrosion. However, all bottles tested to date have passed the hydrostatic test required by the U.S. Department of Transportation. Based upon this data, the Air Transport Association (ATA) requested an exemption from the DOT to allow their members to use this acoustic emission test in place of the hydrostatic test. This exemption, DOT - E 11850, was granted to the ATA on December 11, 1997.

AN (1) AD-A358 177/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Use of Leica Differential Global Positioning System (DGPS) as an Aircraft Precision Tracker

DN (9) Technical note
AU (10) Stevens, Anthony J.
RD (11) Apr 1998
PG (12) 16 Pages
RS (14) DOT/FAA/CT-TN98/8
RN (18) XH-DOT/FAA/CT
RC (20) Unclassified report
DE (23) *TRACKING, *GLOBAL POSITIONING SYSTEM
FLIGHT TESTING, AUTOMATION, AIRCRAFT, ACCURACY, RECEIVERS,
PRECISION,
REPLACEMENT, AUTOMATIC TRACKING, LASER TRACKING

ID (25) *AIRCRAFT TRACKING

AB (27) The Leica (formerly Magnavox) Differential Global Positioning System (DGPS) is a two-receiver GPS system which permits the collection of

highly accurate positions of Federal Aviation Administration (FAA) aircraft. While the William J. Hughes Technical Center has excellent aircraft tracking assets at its Atlantic City International Airport (ACY) location, obtaining tracking services at other locations has proven costly and problematic. This report details the results of flight testing performed at the William J. Hughes Technical Center to demonstrate that the Leica DGPS provides a flexible and reasonably accurate replacement for other forms of aircraft tracking. Aircraft equipped with the Leica DGPS system flew a series of approaches to ACY and data collected from the Leica DGPS system was compared to a highly accurate GTE Precision Automated Tracking System (PATS) Laser Tracker. The Leica DGPS system was found accurate to better than 13 feet.

AN (1) AD-B234 984/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) User Request Evaluation Tool (URET) Conflict Prediction Accuracy Report

AU (10) Cale, Mary Lee

Paglione, Michael

Ryan, Hollis

Timoteo, Dominic

Oaks, Robert

RD (11) Apr 1998

PG (12) 83 Pages

RS (14) DOT/FAA/CT-TN98/8

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *COLLISION AVOIDANCE, *AIR TRAFFIC CONTROL TERMINAL AREAS,

*AIRBORNE

EARLY WARNING

ALGORITHMS, PROTOTYPES, FALSE ALARMS, AIR NAVIGATION, AVIATION

SAFETY,

FLIGHT PATHS, FLIGHT SIMULATION, AIR TRAFFIC

ID (25) URET(USER REQUEST EVALUATION TOOL)

DL (33) 12

AN (1) AD-A340 829/XAG

FG (2) 050600

050900

010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL

INST

TI (6) Differential Training Needs and Abilities at Air Traffic Control

Towers: Should All Controllers Be Trained Equally?

DN (9) Final rept.

AU (10) Thompson, Richard C.

Agen, Rebecca A.

Broach, Dana M.

RD (11) Mar 1998

PG (12) 17 Pages

RN (18) DOT/FAA/AM-98/8

XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *JOB ANALYSIS, *TRAINING MANAGEMENT
REQUIREMENTS, SKILLS, JOB TRAINING

ID (25) TRAINING NEEDS

AB (27) The present study uses job elements identified by subject-matter experts to assess the perceived training needs of air traffic control specialists (ATCSs) who are assigned to towers after successful completion of FAA academy training. The Director of Air Traffic Services tasked The Air Traffic Resource Management Program (ATX) with conducting a training needs assessment. To measure the needed skills and knowledge of new controllers, a survey was developed by ATX and distributed by the Civil Aeromedical Institute to 172 tower level III, IV, and V facility managers and nine regional Air Traffic Division managers. The survey was used to assess the performance-based skills standards needed by new controllers at the time of entry into a field facility. The training capability of individual towers was also examined. The results indicated that there are some differences in the required training of ATCSs assigned to level IV and V towers. Therefore, the tower assignment of new hires should be identified upon entry into the Academy to better focus on the specific training needs of prospective towers.

AN (1) AD-A341 122/XAG

FG (2) 170700

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL

INST

TI (6) Cockpit Integration of GPS: Initial Assessment-Menu Formats and

Procedures

DN (9) Final rept.

AU (10) Wreggit, Steven S.

Marsh, Delbert K., II

RD (11) Mar 1998

PG (12) 24 Pages

RN (18) DOT/FAA/AM-98/9

XH-XD

RC (20) Unclassified report

DE (23) *GLOBAL POSITIONING SYSTEM

FUNCTIONS, ACTIVATION, INTERFACES, PILOTS, NAVIGATION, CIVIL AVIATION,
FLOW CHARTING, EDITING, VIDEO TAPES

AB (27) A popular portable Global Positioning System (GPS) unit (Megellan EC-IOX), representative of this class of devices, was examined for its usability by general aviation pilots. Nine private pilots participated in the experimentation, which was accomplished in three phases: familiarization and training, usability testing, and post-experiment debriefing. During familiarization and training, participants were asked to study flow diagrams representing GPS interface logic, observed a demonstration of the unit's features and procedures, and then were allowed to practice with the unit until they could demonstrate proficiency. During the usability testing phase, participants performed 37 GPS-related tasks requiring waypoint setting, GPS navigation, and general GPS-data entry and retrieval. Findings from videotape, questionnaire, and debriefing data indicated that a number of menu structures interfered with the pilots' successful entry of data, editing of stored data, and activation of functions. For example, one source of confusion resulting in excess button presses was the need to deactivate the flight plan before any editing could be done. Recommendations are made for defining the form of the interface structure in this class of devices, including: A given function should be consistently assigned to one button, feedback should be consistent and meaningful, and an "undo" or "back" function would be a very useful way to decrease the number of button presses required by this interface.

AN (1) AD-A341 726/XAG

FG (2) 060500

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Aeromedical Aspects of Melatonin-An Overview.

DN (9) Final rept.
AU (10) Sanders, Donald C.
Chaturvedi, Arvind K.
Hordinsky, Jerry R.
RD (11) Mar 1998
PG (12) 18 Pages
RS (14) DOT/FAA/AM-98/10
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *PERFORMANCE(HUMAN), *CLINICAL MEDICINE, *PHARMACOLOGY,
*MELATONIN
METHODODOLOGY, CIRCADIAN RHYTHMS, FLIGHT CREWS, BIOCHEMISTRY, AIR
FORCE
PERSONNEL, SHIFTING, DAY, DIURNAL VARIATIONS, BIOSYNTHESIS, BLOOD
PLASMA, SLEEP, AEROMEDICAL EVACUATION, JET LAG, RADIOIMMUNOASSAY,
PINEAL GLAND
ID (25) AIRCRAFT ACCIDENT INVESTIGATION, ANALYTICAL METHODS, BIOCHEMICAL
PHARMACOLOGY, KEYWORDS MELATONIN, MEDICAL CERTIFICATION,
POSTMORTEM
TOXICOLOGY, SHIFT WORK
AB (27) Melatonin, a pineal hormone present in the blood of humans and other
species, has a distinct diurnal variation in its biosynthesis and,
therefore, in its concentration. This variation has suggested the
possibility of a regulatory function in day/night dependent
physiological processes, such as sleep, and has led scientists to
explore the effects of administered melatonin on the modulation of
circadian rhythms. For the self-treatment of sleep disorders and other
benefits, melatonin usage has been extolled to the extent that 20
million new consumers were added to the U.S. retail market in 1995. Its
principal aeromedical application has been in the experimental
treatment of jet lag effects. For aircraft passengers, melatonin
administration at destination-bedtime appears to improve sleep quality
and to decrease the time required to reestablish normal circadian
rhythms. For international aircrews, who travel through multiple time
zones without time to adapt to new environments, taking melatonin prior
to arriving home may further impair already disturbed circadian
rhythms. Its use to adjust to shiftwork changes by air traffic
controllers, aircraft maintenance workers, and support personnel is
even more controversial. Limited studies suggest that giving this
hormone to shift workers should be done only under controlled
conditions and that taking it at the wrong time may actually impair job
performance. Because of its possible interaction with certain
medications and the changes in its concentrations observed in some
clinical conditions, the practitioner must exercise caution during the

medical certification of airmen. The variations in the concentration of
melatonin can be effectively determined by radioimmunoassay,
high-performance liquid chromatography, and gas chromatography-mass
spectroscopy analytical techniques.

AN (1) AD-A342 643/XAG
FG (2) 010308
230600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) Evaluation of Improved Restraint Systems for Sport Parachutists
AU (10) Gowdy, R. V.
DeWeese, Richard
RD (11) Mar 1998
PG (12) 24 Pages
RS (14) DOT/FAA/AM-98/11
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *RESTRAINT, *PARACHUTES
UNITED STATES, IMPACT TESTS, HARNESES, AVIATION SAFETY, DYNAMIC
TESTS,
PARACHUTISTS, SLED TESTS, ANCHORS
ID (25) SPORT PARACHUTE, RISK MANAGEMENT, RESTRAINT SYSTEMS
AB (27) PART OF A COOPERATIVE PROJECT BETWEEN THE Federal Aviation
Administration's Civil Aeromedical Institute, the Parachute Industries
Association, and the United States Parachute Association, a series of
dynamic impact sled tests were performed to evaluate new types of
restraint systems for sport parachutists. The traditional means of
restraining sport parachutists sitting aft-facing on the floor has been
to provide lap belts that are attached to the floor or sidewall of the
airplane. The restraint systems evaluated in this project were designed
to route through the parachute harness and attach to the floor. Thus,
occupant restraint was provided by anchoring the parachute harness to
the floor by means of the new restraint devices. Seven methods of
attaching the restraints to the parachute harness, which included both
single and dual point restraint systems, were dynamically tested.

AN (1) AD-A349 402/XAG
FG (2) 010500
120500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Interim Runway Visual Range/ Automated Surface Observing System Interface Instruction and Operational User Guide

AU (10) Benner, William
McKinney, Michael
Jones, Michael

RD (11) Mar 1998

PG (12) 39 Pages

RS (14) DOT/FAA/CT-TN98/3

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *USER MANUALS, *OBSERVERS, *INTERFACES, *COMPUTER AIDED INSTRUCTION,

*RUNWAYS

COMPUTER PROGRAMS, DEPLOYMENT, INFORMATION TRANSFER, TECHNICIANS, BASE

LINES, INSTALLATION, INTERNATIONAL AIRPORTS, INSTRUCTIONS, AIRPORTS, LOS ANGELES(CALIFORNIA)

ID (25) RVRIASOS(RUNWAY VISUAL RANGE AUTOMATED SURFACE OBSERVING SYSTEM)

AB (27) The Interim Runway Visual Range Automated Surface Observing System Interface (Interim RVRIASOS Interface) Instruction and Operational User Guide is intended to inform users of Interim RVRIASOS Interface performance features. It is designed to allow users to become familiar with proper use of the interface to facilitate data transfer from the New Generation RVR system to the ASOS at required locations. Successful operation of the interface will enable automated Long-Line RVR service from equipped ASOSs. After reading this guide users should be able to properly install, configure, start, and stop operation of the interface as well as troubleshoot most problems that may occur during use. The guide is typically packaged as part of a kit containing equipment and accessories for unaided installation by airport technicians. As of January 31, 1998, operation of the interface exists at seven international airports including: - Los Angeles, CA; Denver, CO; Chicago, IL; Portland, OR; Nashville, TN; Seattle, WA; and San Francisco, CA. Federal Aviation Administration (FAA) plans include installation and operation of the interface at approximately 110 airports throughout the U.S. Current system requirements for installation of the interface are: 1. New Generation RVR National Deployment Baseline version software; and 2. ASOS software version 2.49.

AN (1) AD-A350 324/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Reduced Horizontal Separation Minima (RHSM) Concept Exploration Simulation.

DN (9) Technical note

AU (10) Elkan, Elizabeth
Kopardekar, Parimal
Stahl, David

RD (11) Mar 1998

PG (12) 44 Pages

RS (14) DOT/FAA/CT-TN97/3

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *OPERATIONAL EFFECTIVENESS, *AIR TRAFFIC REQUIREMENTS, SIMULATION, INTEGRATED SYSTEMS, CONTROL SYSTEMS, REGIONS,

REDUCTION, SEPARATION, LABORATORIES, HORIZONTAL ORIENTATION, PACIFIC

OCEAN, OCEAN ENVIRONMENTS

AB (27) The Informal South Pacific Air Traffic Services Coordinating Group has been investigating a number of concepts to improve operational efficiency for flights in the Pacific Oceanic region. The Federal Aviation Administration (FAA) Air Traffic Requirements (ATR-3 10) and Air Traffic Operations (ATO-100) program offices tasked the Simulation and Systems Integration Branch (ACT-540), in cooperation with the Oceanic and Offshore Integrated Product Team (AUA-600), to explore the feasibility of implementing reduced oceanic aircraft separations. These organizations formed an Experimental Working Group to make high-level decisions regarding the implementation of the proposed separation standard. In response, ACT-540 formed a Research Team to design and conduct a concept exploration study at the FAA William J. Hughes Technical Center. The Research Team led all efforts including the planning and design of the simulation and conduct of a simulation. The team also queried the controllers and compiled their responses regarding the proposed procedure. This report discusses the Reduced Horizontal Separation Minima (RHSM) concept exploration simulation. It describes the simulation, procedures, and tools developed to ascertain the experiences of individuals who participated. The concept exploration examined issues that might affect a controller's ability to manage reduced longitudinal separation in the oceanic environment. A demonstration of the RHSM concept was conducted in the Oceanic Laboratory at the Federal Aviation Administration (FAA) William J.

Hughes Technical Center on November 6 and 7, 1996.

AN (1) AD-A354 716/XAG

**FG (2) 040200
120700**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Automated Surface Observing System. ASOS User's Guide

RD (11) Mar 1998

PG (12) 89 Pages

RN (18) XD-XD

RC (20) Unclassified report

DE (23) *USER MANUALS, *INFORMATION SYSTEMS, *METEOROLOGICAL DATA,
*WEATHER

STATIONS

ALGORITHMS, DATA PROCESSING, POSITION(LOCATION), UNITED STATES
GOVERNMENT, AUTOMATION, DETECTORS, COMMUNITIES, DATA

MANAGEMENT,

DISTRIBUTION, INTERFACES, OBSERVATION, PILOTS, RADIO BROADCASTING,
DISPLAY SYSTEMS, COMMERCIAL AVIATION, AERONAUTICS, SURFACES,
VISIBILITY, STRENGTH(GENERAL), METEOROLOGY, USER NEEDS, COMPUTER
APPLICATIONS, MANUAL OPERATION, EXTERNAL, SKY,

OPERATORS(PERSONNEL),

REMOTE AREAS, MESSAGE PROCESSING, VIDEO SIGNALS, AIR TRAFFIC
CONTROLLERS, VOICE COMMUNICATIONS, SCREENS(DISPLAYS), TELEVISION
DISPLAY SYSTEMS

ID (25) ASOS(AUTOMATED SURFACE OBSERVING SYSTEM), OID(OPERATOR
INTERFACE

DEVICE)

AB (27) The ASOS User's Guide provides a fundamental description and explanation of ASOS and its impact upon users of the Aviation Routine Weather Report (METAR) and other ASOS data. This guide is therefore designed to speak to a variety of interests inside and outside the federal meteorological community. The guide is written for those with more than a rudimentary understanding of the manual surface observation program. Using the manual observation as context, the ASOS User's Guide describes the basic ASOS functions of data ingest, data processing and data distribution. Descriptions are provided, element by element, of the sensors and algorithms that ASOS employs. The guide also discusses the unique strengths and limitations of each ASOS data element. Among the basic strengths of the ASOS observation is its capability to measure critical aviation weather parameters, such as sky condition and visibility, at specific locations where they are needed most-the

touchdown zone(s). ASOS data are updated once each minute and transmitted directly to forecasters, air traffic controllers and pilots. ASOS is capable of performing all the basic observing functions and operating in either attended or unattended mode, enabling observing personnel to focus on other demanding duties. ASOS data is accessible through a variety of media never before available from a surface observing site. Local, on-site video screen displays are available on the Operator Interface Device (OID) and the Video Display Unit (VDU). Additional video monitor hook-ups can be made available to airlines and other external users at the airport. Authorized remote users can acquire a wide variety of ASOS data through the a remote user dial-in port. Computer-generated voice message are provided by ASOS for local FAA radio broadcast to pilots and are made available for general aviation use through a dial-in telephone number for each location.

AN (1) AD-A359 839/XAG

**FG (2) 010500
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) The Interim Runway Visual Range/Automated Surface Observing System
Interface Instruction and Operational User Guide**

AU (10) Benner, William

McKinney, Michael

Jones, Michael

RD (11) Mar 1998

PG (12) 42 Pages

RS (14) DOT/FAA/CT-TN98/3

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

NO (21) Prepared in collaboration with Raytheon Service Co., Burlington, MA.

DE (23) *RUNWAYS, *NAVIGATIONAL AIDS

SOFTWARE ENGINEERING, USER MANUALS, INFORMATION TRANSFER,
RANGE(DISTANCE)

ID (25) RVR(RUNWAY VISUAL RANGE), ASOS(AUTOMATED SURFACE OBSERVING
SYSTEM)

AB (27) The Interim Runway Visual Range/Automated Surface Observing System Interface (Interim RVR/ASOS Interface) Instruction and Operational User Guide is intended to inform users of Interim RVR/ASOS Interface performance features. It is designed to allow users to become familiar with proper use of the interface to facilitate data transfer from the New Generation RVR system to the ASOS at required locations. Successful operation of the interface will enable automated Long-Line RVR service

from equipped ASOSs. After reading this guide, users should be able to properly install, configure, start, and stop operation of the interface as well as trouble-shoot most problems that may occur during use. The guide is typically packaged as part of a kit containing equipment and accessories for unaided installation by airport technicians. As of January 31, 1998, operation of the interface exists at seven international airports including: Los Angeles, CA; Denver, CO; Chicago, IL; Portland, OR; Nashville, TN; Seattle, WA; and San Francisco, CA. Federal Aviation Administration (FAA) plans include installation and operation of the interface at approximately 110 airports throughout the U.S. Current system requirements for installation of the interface are: (1) New Generation RVR National Deployment Baseline version software; and (2) ASOS software version 2.49.

AN (1) AD-A339 339/XAG

FG (2) 010305

200600

230600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Performance Demonstrations of Zinc Sulfide and Strontium Aluminate Photoluminescent Floor Proximity Escape Path Marking Systems

DN (9) Final rept.

AU (10) McLean, G. A.

Chittum, C. B.

RD (11) Feb 1998

PG (12) 11 Pages

RN (18) DOT/FAA/AM-98/2

XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *DEMONSTRATIONS, *PERFORMANCE(ENGINEERING),

*PHOTOLUMINESCENCE, *ZINC

SULFIDES, *LIGHTING EQUIPMENT, *ESCAPE SYSTEMS, *STRONTIUM,

*ALUMINATES

VIBRATION, SYSTEMS ENGINEERING, EMERGENCIES, TRAFFIC, PHYSICAL PROPERTIES, MATERIALS, LIGHT SOURCES, ELECTRICITY, POWER,

TRANSPORT

AIRCRAFT, PASSENGERS, SEATS, ACCIDENTS

ID (25) *EMERGENCY LIGHTING SYSTEMS, *FLOOR PROXIMITY MARKING SYSTEMS, INCANDESCENT LUMINARIES, 14 CFR 25.812, PHOTOLUMINESCENT MATERIALS

AB (27) Transport category aircraft are required by 14 CFR 25.812 to have emergency lighting systems, including floor proximity marking systems.

Typical floor proximity marking systems installed on transport category aircraft have been primarily comprised of incandescent luminaries spaced at intervals on the floor, or mounted on the seat assemblies, along the aisle. The requirement for electricity to power these systems has made them vulnerable to a variety of problems, including battery and wiring failures, burned-out light bulbs, and physical disruption caused by vibration, passenger traffic, galley cart strikes, and hull breakage in accidents. Attempts to overcome these problems have led to the proposal that non-electric photoluminescent materials be used in the construction of floor proximity marking systems. To assess the viability of this proposal, performance demonstrations of systems made with such materials were conducted. It was found that strontium aluminate photoluminescent marking systems can be effective in providing the guidance for egress that floor proximity marking systems are intended to achieve; in contrast, zinc sulfide materials were found to be ineffective.

AN (1) AD-A339 340/XAG

FG (2) 010300

060500

070300

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Selection of an Internal Standard for Postmortem Ethanol Analysis

AU (10) Canfield, D. V.

Smith, M. D.

Adams, H. J.

Houston, E. R.

RD (11) Feb 1998

PG (12) 10 Pages

RN (18) DOT/FAA/AM-98/5

XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *QUANTITATIVE ANALYSIS, *INTERNAL, *STANDARDS, *ALCOHOLS, *ETHANOLS

DEGRADATION, METHYL RADICALS, PILOTS, RESOLUTION, MIXTURES, BASE LINES,

AVIATION ACCIDENTS, VOLATILITY, ESTERS, REPRODUCIBILITY,

CONCENTRATION(CHEMISTRY), GAS CHROMATOGRAPHY, AUTOPSY,

PROPIONIC ACID,

BUTANOLS

ID (25) *POSTMORTEM SPECIMENS, HEADSPACE, PROPIONALDEHYDE, T-BUTANOL,

ANTIMORTEM

AB (27) One mission of the Civil Aeromedical Institute is to determine the concentrations of alcohol in postmortem specimens related to aviation accidents. This requires the ability to identify and quantitate a wide range of alcohols that are produced in postmortem specimens. A headspace gas chromatographic procedure utilizing n-propanol as an internal standard had been used in the past. However, n-propanol has been found in postmortem specimens, making n-propanol an unsuitable specimen for an internal standard in the analysis of postmortem specimens. This study evaluated 3 potential replacement internal standards for postmortem ethanol analysis. Method: A mixture of alcohols commonly found in postmortem specimens was prepared and tested using headspace gas chromatography. Solutions were prepared using the test mix and the new internal standards. Data were collected on the resolution and reproducibility of the proposed new internal standards with the test mix. Postmortem cases collected over the past 8 years were reviewed for the presence of specific volatile compounds. Results: Baseline resolution from the test mix was not obtained with propionaldehyde, while propionic acid methyl ester exhibited degradation over time. T-butanol was found to give baseline resolution from all volatile compounds commonly found in antimortem and postmortem specimens. No t-butanol was found in 2880 fatal pilots analyzed over the past 8 years for the presence of volatiles. Conclusion: t-butanol is a better internal standard for the analysis of alcohols in postmortem specimens than propionaldehyde, n-propanol, and propionic acid methyl ester, and is not produced in postmortem specimens.

AN (1) AD-A339 410/XAG

FG (2) 230600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Inflatable Escape Slide Beam and Girt Strength Tests: Support for Revision of Technical Standard Order (TSO) C-69b,6

AU (10) McLean, Garnt A.

Palmerton, David A.

Chittum, Charles B.

George, Mark H.

Funkhouser, Gordon E

RD (11) Feb 1998

PG (12) 17 Pages

RN (18) DOT/FAA/AM-98/3

XH-XD

RC (20) Unclassified report

DE (23) *ESCAPE SYSTEMS, *SLIDING

TEST AND EVALUATION, EMERGENCIES, MANUFACTURING, HUMANS, TEST METHODS,

SURFACES, ASYMMETRY, SYMMETRY, STRENGTH(GENERAL), SAFETY, ATTACHMENT,

TRANSPORT AIRCRAFT, INFLATABLE STRUCTURES, TENSILE TESTERS, DYNAMIC

TESTS, STRUCTURAL COMPONENTS, STRUCTURAL INTEGRITY

AB (27) The ability of inflatable escape slides to provide a safe egress route

for evacuees in transport aircraft emergencies depends, to a great

degree, on the structural integrity of such slides. Recent

certification demonstration evacuations have demonstrated potential

problems with the structural integrity of inflatable escape slides;

specifically, the strength of the major structural elements of escape

slides, i.e., the inflatable beams, has been questioned. With severe

loading of the escape slides, the inflatable beams are known to bend,

sometimes allowing the sliding surfaces between the beams to form cups

that can impede the egress of evacuees by making it hard to climb out

of the slide and onto firm footing. This study was intended to develop

practical dynamic tests of inflatable beam strength that can be

implemented during the developmental manufacturing process for escape

slides to identify and correct inadequate inflatable beam strength. The

result was the development of a practical test that uses sandbags to

simulate human evacuees who are bunched together, tobaggan style,

during movement down the slide. The test provides data essentially

equivalent to that obtained with human test subjects and also provides

substantial benefits to human test subject safety. Additional tests of

the structural integrity of the escape slide girt (attachment-to-

aircraft) were also developed to standardize the test procedures for

girt strength. Prior manufacturing tests had utilized 2 challenges:

static loading of the girt attachment by sandbags laid along the

erected slide surface and lateral loading of the girt by a 25-knot wind

applied horizontally to the side of the erected escape slide. The new

tests use both symmetrical and asymmetrical loading of the girt in a

tensile test machine.

AN (1) AD-A342 060/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Test and Evaluation (OT&E) Performance, Integration and Operational Tests of the Mode S Beacon (Enroute Configuration) Final

Report

DN (9) Technical note
AU (10) Leone, Andrew
RD (11) Feb 1998
PG (12) 127 Pages
RS (14) DOT/FAA/CT-TN97/19
RN (18) XH-DOT/FAA/CT
RC (20) Unclassified report
DE (23) *RADAR BEACONS
TEST AND EVALUATION, MAINTENANCE, OPTIMIZATION, DETECTORS,
INTERFACES,
PROCESSING EQUIPMENT, AIR TRAFFIC CONTROL SYSTEMS, OPERATIONAL
EFFECTIVENESS, LONG RANGE(TIME), LONG RANGE(DISTANCE), EXTERNAL,
VERMONT, SURVEILLANCE, RADAR STATIONS, DUAL CHANNEL, NEW
HAMPSHIRE
ID (25) ARSR(AIR ROUTE SURVEILLANCE RADAR MODEL 24)
AB (27) This document reports the findings of the performance and operational
evaluation tests conducted on the Mode Select (Mode S) Beacon System,
in a full Mode S mode, enroute configuration collocated with a Common
Digitizer Model-2 (CD-2) and Air Route Surveillance Radar (ARSR)
system. The tests were conducted at the Federal Aviation Administration
(FAA) William J. Hughes Technical Center and at the enroute Mode S
keysite located at the St. Albans, Vermont, long range radar facility
in conjunction with Boston Air Route Traffic Control Center (ARTCC),
located in Nashua, New Hampshire. The Mode S systems under test were
fully configured, dual-channel systems having all required external
interfaces connected to actual National Airspace System (NAS)
equipment, with the exception of the Maintenance Processor Subsystem
(MPS), which was not ready for integration with the Mode S at the time
of these tests. A combination of system optimization, surveillance
performance and operational suitability testing were performed as part
of this Operational Test and Evaluation (OT&E) effort. Test goals were
to ensure proper operation of the Mode S sensor in Mode S mode of
operation for an enroute configuration, while integrated with
appropriate NAS equipment. The tests were conducted in accordance with
procedures for OT&E stated in FAA Order 1810.4B. The format of this
test report is in accordance with FAA-STD-024b.

AN (1) AD-A344 936/XAG

FG (2) 010600
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

RESEARCH

TI (6) Federal Aviation Administration Plan for Research, Engineering &
Development, 1998.

RD (11) Feb 1998
PG (12) 183 Pages
RN (18) XH-XD
RC (20) Unclassified report
NO (21) Report to the United States Congress.
DE (23) *CIVIL AVIATION, *RESEARCH MANAGEMENT
MANAGEMENT PLANNING AND CONTROL, AIR TRAFFIC CONTROL SYSTEMS,
HUMAN
FACTORS ENGINEERING, AVIATION SAFETY, AIRPORTS, AVIATION MEDICINE,
PROJECT MANAGEMENT
AB (27) This report contains plans for research and development within the FAA
for 1998. Partial contents include: Objectives, aviation community
initiatives, long-term research, and program area descriptions of air
traffic services, airports technology, aircraft safety, aviation
security, human factors and aviation medicine, environment and energy,
and R,E&D program management.

AN (1) AD-A359 390/XAG

FG (2) 010500
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Airport Surveillance Radar Model 11 (ASR-11) FAA Test and Evaluation
Master Plan (TEMP)

DN (9) Technical note
AU (10) Weber, Ronald
Schanne, Joseph
RD (11) Feb 1998
PG (12) 92 Pages
RS (14) DOT/FAA/CT-TN97/27
RN (18) XH-DOT/FAA/AND
RC (20) Unclassified report
DE (23) *AIRPORT RADAR SYSTEMS, *SURVEILLANCE
TEST AND EVALUATION, REQUIREMENTS, DIGITAL SYSTEMS, AIR FORCE,
DEPARTMENT OF DEFENSE, DETECTORS, DECISION MAKING, PRODUCTION,
OPERATIONAL READINESS, TERMINAL FLIGHT FACILITIES, PROCUREMENT,
SEARCH
RADAR
ID (25) ASR-11(AIRPORT SURVEILLANCE RADAR-11), *FAA(FEDERAL AVIATION

ADMINISTRATION), DASR(DIGITAL AIRPORT SURVEILLANCE RADAR), TEMP(TEST AND EVALUATION MASTER PLAN), AMS(ACQUISITION MANAGEMENT SYSTEM), PSR(PRIMARY SURVEILLANCE RADAR), MSSR(MONOPULSE SECONDARY SURVEILLANCE RADAR)

AB (27) The Airport Surveillance Radar, Model 11 (ASR-11) is a joint Federal Aviation Administration (FAA)/Department of Defense (DoD) procurement program with the United States Air Force (USAF) assuming overall lead responsibility. The DoD has designated their program as the Digital Airport Surveillance Radar (DASR). A joint FAA/DoD Test and Evaluation (T&E) program will be conducted in order to support a joint production decision. A Memorandum of Agreement (MOA) between the two agencies defines overall roles and responsibilities for each agency in accomplishing this effort. This ASR-11 Test and Evaluation Master Plan (TEMP) provides an overview of the joint FAA/DoD test program. It outlines the approach and philosophy to be implemented by the FAA to ensure that all FAA test requirements are met. It assigns responsibilities for each T&E phase, defines requirements for test readiness and acceptance, and identifies how each critical issue and major systems requirement will be tested. The FAA test program outlined in this TEMP will be accomplished in accordance with the Acquisition Management System (AMS) T&E Process Guidelines.

AN (1) AD-A339 254/XAG

FG (2) 010600

050200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 through 1997

AU (10) Collins, W. E.

Wayda, M. E.

RD (11) Jan 1998

PG (12) 82 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *INDEXES, *AVIATION MEDICINE

UNITED STATES GOVERNMENT, REPORTS, HISTORY, MEDICAL RESEARCH

ID (25) CARI(CIVIL AEROMEDICAL RESEARCH INSTITUTE), FEDERAL AVIATION ADMINISTRATION, OFFICE OF AVIATION MEDICINE

AB (27) An index to Federal Aviation Administration Office of Aviation Medicine

Reports (1964-1997) and Civil Aeromedical Institute Reports is presented for those engaged in aviation medicine and related activities. The index lists all FAA aviation medicine reports published from 1961 through 1997: chronologically (pp. 1-43), alphabetically by author (pp. 45-52), and alphabetically by subject (pp. 53-75). A foreword illustrates historical aspects of the Civil Aeromedical Institute's 35 years of service, describes the index's sections, and explains how to obtain copies of published Office of Aviation Medicine technical reports.

AN (1) AD-A366 863/XAG

FG (2) 010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Criminal Acts Against Civil Aviation, 1998.

RD (11) 1998

PG (12) 85 Pages

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *SECURITY, *CIVIL AVIATION, *CRIMES

AIRCRAFT, RISK, THREATS, ATTACK, REPORTS, AERONAUTICS, CASE STUDIES, RECORDS, BOMBING

AB (27) This report, entitled Criminal Acts Against Civil Aviation, is a compilation of hijackings, bombings, and other significant criminal acts against civil and general aviation interests worldwide. Criminal Acts Against Civil Aviation is a publication of the Federal Aviation Administration's Office of Civil Aviation Security. This document records incidents that have taken place against civil aviation aircraft and interests worldwide. Criminal Acts has been published each year since 1986. Incidents recorded in this report are summarized in regional geographic overviews. Feature articles focus on case histories or on specific aviation-related issues. Incidents are also sorted into one of seven categories and compared over a five-year period. In addition, charts and graphs have been prepared to assist the reader in interpreting the data. The cutoff date for information in this report is December 31, 1998. A new appendix, Appendix G, appears in this year's Criminal Acts report. This appendix identifies which aviation incidents in the past five years are considered politically-motivated acts. Incidents for 1998 in this category are so identified in the individual incident summaries contained in the geographic regional reports.

AN (1) AD-A340 228/XAG
FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

**TI (6) Effect of Free Flight Conditions on Controller Performance, Workload,
and Situation Awareness**

DN (9) Technical note
AU (10) Endsley, Mica R.
Mogford, Richard H.
Allendoerfer, Kenneth R.
Snyder, Michael D.
Stein, Earl S
RD (11) Dec 1997
PG (12) 53 Pages
RS (14) DOT/FAA/CT-TN97/12
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *PERFORMANCE(HUMAN), *WORKLOAD, *AIR TRAFFIC CONTROLLERS,
*FREE FLIGHT
COMMERCIAL AIRCRAFT, AIR TRAFFIC CONTROL SYSTEMS, AIR SPACE,
AVIATION

SAFETY, AWARENESS

AB (27) Free flight represents a major change in the way that aircraft are handled in the National Airspace System. It has the potential to significantly increase airspace utilization and, by doing so, improve aircraft throughput. The degree to which these objectives can be met without compromising aircraft safety will depend on appropriate changes in the air traffic control system. This study provides an evaluation of some of the potential effects of free flight on controllers' ability to maintain an accurate and complete picture of the traffic situation. This picture or mental representation is essential for monitoring and separation functions. The study revealed that, using current technology, some aspects of free flight may adversely influence the situation awareness and performance of controllers. The results provide information on some possible consequences of free flight that should be explored in future research.

AN (1) AD-A340 243/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

**TI (6) Automation in General Aviation: Two Studies of Pilot Responses to
Autopilot Malfunctions**

DN (9) Final rept
AU (10) Beringer, Dennis B.
Harris, Howard C., jr
RD (11) Dec 1997
PG (12) 26 Pages
RS (14) DOT/FAA/AM-97/24
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *MALFUNCTIONS, *AUTOMATIC PILOTS
AUTOMATION, AIRFRAMES, APPLIED PSYCHOLOGY, FLIGHT SIMULATION,
WARNING
SYSTEMS, INSTRUMENT FLIGHT
AB (27) Study 1 examined four automation related malfunctions (runaway pitch trim up, roll servo failure, roll sensor failure, pitch drift up) and subsequent pilot responses. Study 2 examined four additional malfunctions; two more immediately obvious (runaway pitch trim down, runaway roll servo) and two subtler (failed attitude indicator, pitch sensor drift down) than those in Study 1, and the effect of an auditory warning. Data collection was performed in the Civil Aeromedical Institute's Advanced General Aviation Research Simulator, configured as a Piper Malibu. Results suggest that maladaptive responses to some of these failures may, in a significant percentage of cases, lead to significant altitude loss, overstress of the airframe, disorientation of the pilot, or destruction of the aircraft. Percentages of successful recoveries, detection/correction times, and related indices of performance are discussed in the context of malfunction type, flight profile, and auditory alerts.

AN (1) AD-A340 317/XAG
FG (2) 120900
250400
230300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Voice Technology Study Report

DN (9) Study rept.
AU (10) Mogford, Richard M.
Rosiles, Armida
Wagner, Dan
Allendoerfer, Kenneth R.

RD (11) Dec 1997
 PG (12) 29 Pages
 RS (14) DOT/FAA/CT-TN97/2
 RN (18) XH-XD
 RC (20) Unclassified report
 DE (23) *SPEECH RECOGNITION, *VOICE COMMUNICATIONS, *AIR TRAFFIC CONTROL
 TERMINAL AREAS
 AIRCRAFT MAINTENANCE, PERFORMANCE(HUMAN), HUMAN FACTORS
 ENGINEERING,
 FEASIBILITY STUDIES, SPEECH TRANSMISSION, MAN COMPUTER INTERFACE,
 WORKLOAD, AIR TRAFFIC CONTROLLERS, MACHINE CODING, USER FRIENDLY
 AB (27) This document presents the findings of a voice technology study that evaluated the potential of a speech to text and voice recognition system to support an Airway Facilities maintenance task. Researchers conducted the test at an Airport Surveillance Radar (ASR)-9 site at the William J. Hughes Technical Center. Thirteen Airway Facilities specialists completed the procedure twice, once with the voice technology system and again with a paper manual. The results showed no differences in task completion time or workload, suggesting that the voice technology system was no more time consuming or difficult to use than a traditional paper manual. The voice recognition rate was 86.6%. Questionnaire responses showed that users found the voice technology system understandable, easy to control, and responsive to voice commands. When asked to compare voice technology to the use of a paper manual for the Air Traffic Control Beacon Interrogator (ATCBI)-5 maintenance procedure, study participants indicated that the voice technology system made the maintenance task easier to perform, was more efficient and effective than a paper manual, and would be better for handling large amounts of information. Researchers concluded that this study resulted in a successful demonstration of voice technology for the Airway Facilities maintenance procedure. It was recommended that further, more extensive studies be conducted using voice technology systems in a wider variety of Airway Facilities environments and tasks.

AN (1) AD-A340 501/XAG
 FG (2) 120100
 140200
 170703
 CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
 TI (6) En Route Generic Airspace Evaluation.
 DN (9) Technical note

AU (10) Guttman, Jerry A.
 Stein, Earl S.
 RD (11) Dec 1997
 PG (12) 64 Pages
 RS (14) DOT/FAA/CT-TN97/7
 CT (15) DTFA03-93-C-00032
 RN (18) XH-XD
 RC (20) Unclassified report
 DE (23) *TEST AND EVALUATION, *PERFORMANCE(HUMAN), *AIR TRAFFIC CONTROL SYSTEMS, *ERROR ANALYSIS
 SCENARIOS, FUNCTIONS, VALIDATION, EXPERIMENTAL DESIGN,
 COMMUNICATION
 EQUIPMENT, CORRELATION, LIMITATIONS, AIR SPACE, HIGH ALTITUDE, SELF OPERATION, AVIATION PERSONNEL, VOICE COMMUNICATIONS, CONDITIONING(LEARNING), HABITUATION LEARNING
 ID (25) ATC(AIR TRAFFIC CONTROL), ATWIT(AIR TRAFFIC WORKLOAD INPUT TECHNIQUE),
 GENERIC SECTOR
 AB (27) This En Route Generic Airspace Evaluation is one of a series of air traffic control (ATC) simulation experiments. It is directed toward development and validation of the use of generic airspace for use in ATC research and development. For this project, generic refers to a sector that embodies the important elements of an en route sector including airways, en route radar performance, restricted areas, and radar procedures. In a generic sector, conditions are standardized. This is a significant advantage over using each controller's home sector where many factors vary such as familiarity and sector complexity. Experienced Federal Aviation Administration personnel developed and tested this en route generic airspace. The design was based on a typical high-altitude sector used in many en route centers. In addition, the sector was designed to facilitate rapid learning. In this experiment, experienced controllers performed their normal functions working with realistic traffic scenarios presented by a high fidelity ATC simulator. Voice communication equipment enabled controllers to issue commands to remote simulation pilots. The results showed that three performance measurement categories (Air Traffic Workload Input Technique (ATWIT) ratings, system effectiveness measures, and controller self ratings of performance) showed high correlations between the generic and home sectors.

AN (1) AD-A340 649/XAG
 FG (2) 110700
 131200

CA (5) FEDERAL AVIATION ADMINISTRATION ATLANTIC CITY NJ AIRPORT AND AIRCRAFT

SAFETY RESEARCH AND DEVELOPMENT

TI (6) Fire-Resistant Materials: Research Overview

DN (9) Final rept.

AU (10) Lyon, Richard E.

RD (11) Dec 1997

PG (12) 23 Pages

RS (14) DOT/FAA/AR-97/99

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FIRE RESISTANT MATERIALS

COMMERCIAL AIRCRAFT, POLYMERS, COMPOSITE MATERIALS, COMBUSTION, AVIATION ACCIDENTS, THERMOPLASTIC RESINS, FLAMMABILITY,

THERMOSETTING

PLASTICS, FIRE SAFETY, AIRCRAFT CABINS

AB (27) This report provides an overview of the research being conducted by the Federal Aviation Administration (FAA) to develop fire safe cabin materials for commercial aircraft. The objective of the Fire-Resistant Materials program is to eliminate burning cabin materials as a cause of death in aircraft accidents. Long-term activities include the synthesis of new, thermally stable, low fuel value organic and inorganic polymer systems. The synthesis effort is supported by fundamental research to understand polymer combustion and fire resistance mechanisms using numerical and analytic modeling and the development of new characterization techniques.

AN (1) AD-A341 106/XAG

**FG (2) 230200
250400**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Human Factors Evaluation of Vocoders for Air Traffic Control Environments Phase II: ATC Simulation.

DN (9) Technical rept.

AU (10) Sollenberger, Randy L.

LaDue, James

Carver, Brian

Heinze, Annmarie

RD (11) Dec 1997

PG (12) 48 Pages

RS (14) DOT/FAA/CT-TN97/25

CT (15) DTFA03-94-C-00042

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ENVIRONMENTS, *HUMAN FACTORS ENGINEERING, *AIR TRAFFIC CONTROLLERS,

*VOICE COMMUNICATIONS, *VOCODERS

SIMULATION, PERFORMANCE(HUMAN), PILOTS, AIR TRAFFIC CONTROL

SYSTEMS,

SOLUTIONS(GENERAL), HELICOPTERS, COMMUNICATION AND RADIO

SYSTEMS,

WORKLOAD, BANDWIDTH, NOISE POLLUTION, ANALOG SYSTEMS, CHANNELS, BACKGROUND NOISE, JET AIRCRAFT NOISE, AIRCRAFT NOISE

AB (27) Vocoders offer a potential solution to radio congestion by digitizing

human speech and compressing the signal to achieve low bandwidth voice

transmissions. A reduction in bandwidth will allow the addition of more

communication channels to the system and reduce radio congestion. This

air traffic control simulation study is the second phase of a research

effort to compare the effectiveness of two 4.8 kbps vocoders

(designated as A and B for test purposes) with the current analog radio

communication system. Sixteen air traffic controllers from Level 5

Terminal Radar Approach Controls participated in the study and

performed 12 one hour traffic scenarios over 3 days of testing.

Scenarios consisted of medium and high traffic volumes designed to

produce different levels of controller taskload. The communications

configuration allowed each simulation pilot to transmit with jet,

propeller, or helicopter background noises. The results indicated that

the vocoders did not affect controller workload or performance. In

general, intelligibility and acceptability ratings were highest for

analog radio, slightly lower for vocoder B, and lowest for vocoder A.

In addition, intelligibility and acceptability ratings were highest for

jet background noise, slightly lower for propeller background noise,

and lowest for helicopter background noise. Controller taskload had no

effect on intelligibility and acceptability. This human factors

evaluation indicated that both vocoders were highly intelligible and

acceptable for air traffic control environments. Even the least

preferred vocoder did not substantially interfere with controller

performance. This study suggests that vocoder technology could replace

the current analog radio system in the future.

AN (1) AD-A341 592/XAG

**FG (2) 010200
131200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) A Field Study of Transponder Performance in General Aviation Aircraft

DN (9) Final rept.
AU (10) Talotta, Micholas J.
RD (11) Dec 1997
PG (12) 43 Pages
RS (14) DOT/FAA/CT-97/7
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COLLISION AVOIDANCE, *GENERAL AVIATION

AIRCRAFT
HEALTH, TRANSPONDERS

AB (27) This report documents the results of a field study conducted to sample the technical health of transponders carried by General Aviation (GA) aircraft currently operating in the National Airspace System (NAS).

AN (1) AD-A342 606/XAG
FG (2) 120600
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Target Data Extractor (TDX-2000D) Test Plan

DN (9) Technical note.
AU (10) McDonald, Raymond K.
Conklin, William P.
RD (11) Dec 1997
PG (12) 57 Pages
RS (14) DOT/FAA/CT-TN97/23
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *DIGITAL SYSTEMS, *OFF THE SHELF EQUIPMENT, *COMMERCIAL EQUIPMENT,

*RADAR SIGNALS, *DATA PROCESSING TERMINALS
TEST AND EVALUATION, DATA PROCESSING, OPTIMIZATION, AUTOMATION, WEATHER, DISTRIBUTION, INTERFACES, SITES, REPORTS, RADAR, TARGETS, HUMAN FACTORS ENGINEERING, GROUND CONTROLLED APPROACH RADAR, MAINTAINABILITY, RELIABILITY, ENGINEERING, INTEGRATION, PLANNING, SIGNALS, VECTOR ANALYSIS, EXTERNAL, AIR FORCE FACILITIES, ADAPTATION, ANALOG SYSTEMS, REMOTE CONTROL, CONSOLES, STARS, MAINTENANCE

EQUIPMENT,
UNINTERRUPTABLE POWER GENERATION, BEACONS

ID (25) TDX 2000D(TARGET DATA EXTRACTOR MODEL 2000D), SDU(SIGNAL DISTRIBUTION

UNIT), CMC(CONTROL AND MAINTENANCE CONSOLE), UPS(UNINTERRUPTABLE POWER SUPPLY), ARTS(AUTOMATED RADAR TERMINAL SYSTEM), ASR-8(AIRPORT SURVEILLANCE RADAR MODEL 8)

AB (27) The Sensis Target Data Extractor Model 2000d (TDX 2000D) is a Commercial Off The Shelf (COTS) radar signal and data processing system. It is designed to interface with analog radar and beacon systems to produce digital target reports and digital weather vector reports. The system consists of one Signal Distribution Unit (SDU), two redundant Target Data Extractor (TDX) units, a local and remote Control and Maintenance Console (CMC), and an Uninterruptable Power Supply (UPS). This document defines the overall planning, test activities, and coordination associated with the Test and Evaluation (T&E) of the TDX 2000d and Automated Radar Terminal System (ARTS) Interface Unit (AIU) for the Airport Surveillance Radar Model 8 (ASR-8) and its co-located beacon system. The T&E will determine system performance and verify integration with the Standard Terminal Automation Replacement System (STARS) and the ARTS IIA. Test results will aid in the development of National Certification procedures for the TDX 2000d and AIU. The tests will be performed at the Federal Aviation Administration (FAA) William J. Hughes Technical Center, Dobbins Air Force Base (AFB), and at the Atlanta Terminal Radar Approach Control (TRACON) facility. The T&E will consist of Integration tests and limited Operational tests. Technical Center Integration tests will verify that the TDX 2000d and MU can correctly communicate with external National Airspace System (NAS) equipment (i.e., STARS, ARTS IIA) and evaluate the NAS end-to-end performance. Operational tests will evaluate the effectiveness and suitability of the TDX 2000d and AIU when integrated into NAS.

AN (1) AD-A340 366/XAG
FG (2) 060500
061300

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Bloodborne Pathogens in Aircraft Accident Investigation

DN (9) Final rept.
AU (10) Salazar, G. J.
DeJohn, C. A.
Hansrote, R. W.
Key, O. R.

RD (11) Nov 1997
PG (12) 13 Pages

RN (18) DOT/FAA/AM-97/21
XH-XD
RC (20) Unclassified report
DE (23) *PATHOGENIC MICROORGANISMS, *BLOOD, *OCCUPATIONAL DISEASES
HEALTH, SAFETY, AVIATION ACCIDENTS, PERSONNEL, ACCIDENT
INVESTIGATIONS
ID (25) *BLOODBORNE PATHOGENS, OSHA(OCCUPATIONAL SAFETY AND HEALTH
ADMINISTRATION)
AB (27) The Occupational Safety and Health Administration (OSHA) amended 29 CFR
part 1910 in 1991 to include regulations addressing occupational
exposure to bloodborne pathogens (BBP). The rule affects all employees
who have the potential for occupational exposure to these pathogens. An
accident scene presents significant challenges in terms of implementing
a program which was primarily envisioned to affect personnel in
"traditional" healthcare delivery facilities; the OSHA requirements now
had to be met in the chaotic, inhospitable, and logistically difficult
environment of an aircraft accident site.

AN (1) AD-A340 406/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) The Use of Weather Information in Aeronautical Decision-Making: II

DN (9) Final rept

AU (10) Driskill, Walter E.

Weissmuller, Johnny J.

Quebe, John C.

Hand, Darryl K.

Hunter, David R.

RD (11) Nov 1997

PG (12) 56 Pages

RS (14) DOT/FAA/AM-97/23

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Prepared in collaboration with Metrica, Inc., San Antonio, TX.

DE (23) *DECISION MAKING, *WEATHER, *AVIATION SAFETY
LINEAR SYSTEMS, PILOTS, TERRAIN, PRECIPITATION, FLIGHT, VISIBILITY,
GEOGRAPHIC AREAS, INFORMATION PROCESSING, CEILING

AB (27) An investigation was conducted of the values, or worth functions,
pilots attribute to weather and terrain variables in making decisions
about flight in a single engine aircraft under visual flight rules.

This study replicated earlier exploratory research (Driskill,

Weissmuller, Quebe, Hand, Dittmar, and Hunter, 1997) that used data
from a single geographic area. The present study obtained data from
pilots in six geographic regions of the United States. The results of
this study confirm the three tentative hypotheses suggested by the data
from the initial study: (1) Cognitive processes that pilots utilize in
making aeronautical decisions can be modeled using regression methods;
(2) The values pilots associate with varying levels of ceiling,
visibility, and precipitation are a function of the terrain over which
the flight is made; and (3) While values differ among pilots, specific
policies can be found to describe how they assign weights in making
decisions about beginning or continuing a flight. Generally, pilots use
a compensatory decision strategy, combining the weather variables in
making judgments about flight by compensating for poor conditions in
one variable with better conditions in other variables. However, under
some circumstances, pilots also tend to employ a worst factor strategy;
that is, pilots appear to have personal standards for either ceiling,
visibility, or precipitation, below which they become reluctant to make
a flight.

AN (1) AD-A341 121/XAG

FG (2) 040200

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Weather Systems Processor (WSP) Demonstration Validation (DEMVAL) Plan
(Phase I and Phase II).

AU (10) Martinez, Radame

Lee, Tai

Adamskyj, Cindy

Stretcher, Baxter

RD (11) Nov 1997

PG (12) 39 Pages

RS (14) DOT/FAA/CT-TN97/22

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *WEATHER, *METEOROLOGICAL DATA, *AIRPORT RADAR SYSTEMS, *AIR
TRAFFIC

TEST AND EVALUATION, ACCEPTANCE TESTS, TEST BEDS, VALIDATION,
DEMONSTRATIONS, EFFICIENCY, PROCESSING EQUIPMENT, DELAY

ID (25) WSP(WEATHER SYSTEMS PROCESSOR), DEMVAL(DEMONSTRATION
EVALUATION),

RESEARCH AND DEVELOPMENT

AB (27) Research and development of the Weather Systems Processor (WSP) is

being accomplished in an effort to satisfy one of the Federal Aviation Administration's (FAA) performance goals in the area of System Efficiency, which is to develop and demonstrate the capability of new systems to decrease the rate of delays due to weather by 10 percent by the year 2002. This plan addresses the Massachusetts Institute of Technology/Lincoln Laboratory (MIT/LL) Demonstration Validation (DEMVAl) of the test bed WSP at their Terminal Radar Development Facility (TRDF) in Albuquerque, New Mexico. This DEMVAL began in November 1995, and will continue through 1997. The purpose of this plan is to provide an overview of the MIT/LL DEMVAL to assist the FAA with its DEMVAL monitoring responsibilities, and with future WSP Test and Evaluation (T&E) activities, including Development Test and Evaluation (DT&E) and Production Acceptance Test and Evaluation (PAT&E) monitoring and System Test conduct.

AN (1) AD-A331 623/XAG

**FG (2) 010600
010500**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) National Simulation Capability (NSC) Reduced Vertical Separation Minima
(RVSM) Phase III Result Report**

DN (9) Final rept.

**AU (10) Seegar, Diena
Canaras, Stacy
Kopardekar, Parimal**

RD (11) Oct 1997

PG (12) 97 Pages

RS (14) DOT/FAA/CT-TN97/9

RN (18) XH-XD

RC (20) Unclassified report

**DE (23) *FLIGHT PATHS, *AIR TRAFFIC, *AIR TRAFFIC CONTROLLERS
PERFORMANCE(HUMAN), AIR TRAFFIC CONTROL SYSTEMS, AIRPORT RADAR
SYSTEMS,**

**AIR NAVIGATION, AIR SPACE, CIVIL AVIATION, FLIGHT MANEUVERS,
WORKLOAD,
AVIATION SAFETY, ALTITUDE, FLIGHT SIMULATION, VISUAL FLIGHT RULES,
TRANSITION FLIGHT**

ID (25) RVSM(REduced VERTICAL SEPARATION MINIMA)

**AB (27) The Reduced Vertical Separation Minima (RVSM) experiment resulted from
the North Atlantic Systems Planning Group (NATSPG) conclusion to carry
out studies aimed at achieving early implementation of RVSM in the
North Atlantic Region. RVSM is an approved International Civil Aviation**

Organization (ICAO) concept to reduce aircraft vertical separation from the Conventional Vertical Separation Minima (CVSM) of 2000 ft to 1000 ft, between flight level (FL) 290 and FL 410, within a designated portion of the North Atlantic Region. RVSM Phase 3 simulation studies were conducted in October 1995 at the Miami Air Route Traffic Control Center Dynamic Simulation Laboratory. The study investigated workload effects and the feasibility of transitioning aircraft to and from CVSM and from and to RVSM within radar sectors R1, R60, R62, and R63 under various traffic conditions. Generally, RVSM conditions proved to be more workload intensive than CVSM conditions. However, even though workload was increased, there was no corresponding increase in operational errors or deviations with RVSM when compared to CVSM. Both controller and Technical Observer ratings revealed that interval and post-run workload ratings were either equal or higher for RVSM under contingency/emergency (RVSM-E) conditions when compared to normal RVSM conditions. Analysis of operational errors revealed the same trend; more errors were reported during RVSM-E. Therefore, guidelines to handle potential complications such as radar outages and bad weather need to be developed before RVSM can be safely implemented. The results of the simulation generally indicate that RVSM implementation is feasible in the Western Atlantic Track Route System region. Although controllers expressed concerns about safety in maintaining separation and transitioning aircraft to and from RVSM altitudes, most indicated their comfort level would inc

AN (1) AD-A331 577/XAG

**FG (2) 170703
250400**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Human Factors Evaluation of Vocoders for Air Traffic Control
Environments Phase I: Field Evaluation.**

DN (9) Technical note

**AU (10) LaDue, James
Sollenberger, Randy L.
Belanger, Bill
Heinze, Annemarie**

RD (11) Sep 1997

PG (12) 61 Pages

RS (14) DOT/FAA/CT-TN97/11

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMMUNICATION EQUIPMENT, *AIR TRAFFIC CONTROL SYSTEMS, *VOCODERS
HUMAN FACTORS ENGINEERING, COMMUNICATION AND RADIO SYSTEMS, DIGITAL COMMUNICATIONS, VOICE COMMUNICATIONS, DIGITAL RECORDING SYSTEMS
ID (25) AERONAUTICAL COMMUNICATIONS
AB (27) Communication congestion is a major problem facing the air traffic control system. Vocoders offer a potential solution to this problem by compressing a digitized human speech signal to achieve low bandwidth voice transmissions. Air traffic controllers and pilots must find new systems usable and acceptable before the FAA authorizes implementation. This study compared the performance of two 4.8 kbps vocoders (designated as A and B) with the current analog radio system. Two hundred and seven current air traffic controllers participated in the study. Participants listened to recorded audio messages and provided written responses. The dependent measures included both subjective ratings and objective measures of intelligibility and acceptability. The research design controlled the independent measures of sex of speaker, background noise, and communication equipment. The results indicated that analog radio and vocoder B communications scored subjectively similar. Participants rated radio higher than vocoder B in intelligibility and vocoder B higher than radio in acceptability. They gave Vocoder A the lowest ratings using the subjective scales. An objective message completion test revealed that vocoder B was more intelligible than vocoder A. The results found no generally preferred sex of speaker for vocoder transmissions. There were no major effects of cockpit background noise on the communications.

AN (1) AD-A331 655/XAG
FG (2) 170703
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Mode S Beacon System Enroute Configuration Interim Beacon Initiative (IBI) Mode Operational Test and Evaluation (OT&E) Test Report

DN (9) Technical note

AU (10) Starkman, Joseph J.
Karitis, Paul

RD (11) Sep 1997

PG (12) 82 Pages

RS (14) DOT/FAA/CT-TN95/61

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *SEARCH RADAR, *RADAR BEACONS TEST AND EVALUATION, OPTIMIZATION, OPERATIONAL EFFECTIVENESS, RADAR

RECEIVERS, RADAR STATIONS, DUAL CHANNEL

ID (25) ATCBI(AIR TRAFFIC CONTROL BEACON INTERROGATORS)

AB (27) This document reports the findings of the operational evaluation tests conducted on the Interim Beacon Initiative (IBI) mode, enroute configuration of the Mode Select Beacon System (Mode S) . The tests were conducted at the Parker radar facility in Denver, Colorado, site of the first enroute Mode S system delivery. The Mode S system under test was a fully configured, dual-channel sensor having all required external interfaces connected to actual National Airspace System (NAS) equipment. A combination of system optimization, surveillance performance evaluation, and operational suitability testing were performed as part of this Operational Test and Evaluation (OT&S) effort. Test goals were to ensure proper operation of the Mode S sensor in IBI mode for an enroute configuration, while integrated with appropriate NAS equipment. The tests were conducted in accordance with procedures for OT&E stated in FAA Order 1810.4B. The format of this test report is in accordance with FAA-STD-024b.

AN (1) AD-A337 151/XAG

FG (2) 010200
050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE

TI (6) Data Quality Improvements for FAA

AU (10) Perry, Richard

Marlman, Karen

Werner, Paul

Olson, David

RD (11) Sep 1997

PG (12) 16 Pages

RS (14) SAND-97-2336C, CONF-9709102

RN (18) FAA-UC-000

XF-DOE/ER

RC (20) Unclassified report

AL (22) Available only to DTIC users. No copies furnished by NTIS.

DE (23) *DATA MANAGEMENT, *AVIATION SAFETY

REQUIREMENTS, METHODOLOGY, UNITED STATES, AIRCRAFT, INFORMATION SYSTEMS, PERFORMANCE TESTS, SOLUTIONS(GENERAL), QUALITY, SHARING, FLIGHT, SAFETY, QUALITY CONTROL, STANDARDS, AIR TRANSPORTATION

ID (25) DOE COLLECTION, M98000237

AB (27) Effective communication among air safety professionals is only as good as the information being communicated. Data sharing cannot be effective unless the data are relevant to aviation safety problems, and decisions based on faulty data are likely to be invalid. The validity of aviation safety data depends on satisfying two primary characteristics. Data must accurately represent or conform to the real world (conformance), and it must be relevant or useful to addressing the problems at hand (utility). The Federal Aviation Administration, in efforts to implement the Safety Performance Analysis System (SPAS), identified significant problems in the quality of the data which SPAS and FAA air safety professionals would use in defining the state of aviation safety in the United States. These findings were reinforced by Department of Transportation Inspector General and General Accounting Office investigations into FAA surveillance of air transport operations. Many recent efforts to improve data quality have been centered on technological solutions to the problems. These technical approaches are closely related to earlier "quality control" methodologies. They concentrate on reducing errors in the data (conformance), but they cannot adequately address the relationship of data to need (utility). Sandia National Laboratories (Sandia), working with the FAA's Airport and Aircraft Safety Research and Development Division and the Flight Standards Service, has been involved in four programs to assist FAA in addressing their data quality problems. The Sandia approach has been data-driven rather than technology-driven. In other words, the focus has been on first establishing the data requirements by analyzing the FAA's surveillance and decision-making processes.

20

AN (1) AD-A340 222/XAG
FG (2) 040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Aviation Weather Center Area Forecaster and Convective SIGMET Forecaster Human Factors Evaluation Report
AU (10) Benner, William
Carty, Thomas
Fox, Starr
Peio, Karen
RD (11) Sep 1997
PG (12) 104 Pages
RS (14) DOT/FAA/CT-TN97/18
RN (18) XH-XD
RC (20) Unclassified report

DE (23) *WEATHER, *WEATHER FORECASTING, *HUMAN FACTORS ENGINEERING CONTROL, REQUIREMENTS, CONFIGURATIONS, ADVERSE CONDITIONS, TIMELINESS, WORKLOAD, MENU
ID (25) *AWC(AVIATION WEATHER CENTER)
AB (27) This report describes the human factors evaluation of the Aviation Weather Center (AWC) forecaster work area conducted by ACT-320 at AWC in Kansas City, Missouri, from October 30 through November 3, 1995, and November 14 through November 17, 1995. The evaluation of the AWC forecaster work area revealed several issues that impacted the performance, comfort, and workload of forecasters. The following problems could create considerable unnecessary task loading on the forecaster during severe weather conditions: a. Awkward workspace arrangement, b. Poorly organized menu systems, c. Lack of a help system/reference information, and d. The need for excessive control actions. Given the requirement for timeliness in the forecaster's tasks, care should be taken to resolve any problems that may hinder performance or increase workload. Implementation of recommended solutions as well as an ergonomically designed workspace should provide forecasters with a future work area that shows improvement over the current configuration.

AN (1) AD-A340 427/XAG
FG (2) 040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Aviation Impact Variable (AIV) Editor Evaluation Report
DN (9) Technical note
AU (10) Benner, William
Carty, Thomas
Fox, Starr
Sims, Danny
Peio, Karen
RD (11) Sep 1997
PG (12) 94 Pages
RS (14) DOT/FAA/CT-TN97/17
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *WEATHER, *FORECASTING GRIDS, ICE FORMATION, METEOROLOGICAL DATA, INFLIGHT
AB (27) This report summarizes the Aviation Impact Variable (AIV) Editor evaluation conducted at the Aviation Weather Center (AWC) in Kansas City, Missouri, by ACT-320, from February 13 through 23, 1996. The AIV

Editor was developed by the Forecast System Laboratory (FSL) to enable forecasters to view and edit weather data grids used to issue Airmen Meteorological Statements (AIRMETS). The current prototype version addresses in flight icing potential only. Many users indicated that training was inadequate; therefore, they were uncomfortable using several editor functions, especially the higher level concepts (i.e., Vertical Interpolation, Algorithmic Parameters, and Volume Viewer). The effect of training was evident in the results, as the higher level concepts received less than acceptable utility and ease of use ratings while most other concepts received acceptable ratings. However, almost all require some improvement. The conclusions and recommendations contained within this report should be assessed for their feasibility and integrated into the AIV Editor, if possible. While these recommendations will not resolve every problem, they will, if implemented overcome many problems currently experienced by the forecaster.

AN (1) AD-A328 996/XAG

**FG (2) 140200
010300**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

TI (6) A Flexible Cabin Simulator.

DN (9) Final rept.

AU (10) Marcus, Jeffrey H.

RD (11) Aug 1997

PG (12) 19 Pages

RN (18) DOT/FAA/AM-97/18
XH-XD

RC (20) Unclassified report

DE (23) *SIMULATORS, *AIRCRAFT CABINS

EMERGENCIES, MODULAR CONSTRUCTION, ILLUMINATION, PASSENGER
AIRCRAFT,
EXITS, EVACUATION

ID (25) *PASSENGER AIRCRAFT EVACUATION, *EXPERIMENTAL CABIN SIMULATOR

AB (27) Experimental research on issues related to emergency evacuation of a passenger aircraft cabin have tended to use existing aircraft cabins. While a great deal of useful information has been collected, these facilities have limited capabilities to be configured to investigate new or unusual cabin arrangements. A concept design for a flexible cabin simulator has been completed and is described. The proposed facility can simulate any aircraft cabin from a small, commuter

category aircraft through a multi-aisle, multi-deck mega-jumbo transport. The simulator allows full flexibility in terms of exit type and placement, location and design of interior monuments, and the size and layout of the passenger cabin. Experimental control is possible of interior and exterior illumination levels, the presence of vision obscuring smoke, and the door sill height when using evacuation slides. Built from modular sections, it might be used in the future to investigate new and unusual cabin designs, such as the flying wing. The proposed simulator is described to illustrate its versatility. The associated building and project costs are also discussed.

AN (1) AD-A329 231/XAG

**FG (2) 050900
090100
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE**

**TI (6) Designing Selection Tests for the Future National Airspace System
Architecture.**

DN (9) Final rept.

AU (10) Broach, Dana

RD (11) Aug 1997

PG (12) 12 Pages

RS (14) DOT/FAA/AM-97/19

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *PERSONNEL SELECTION, *ELECTRONIC
TECHNICIANS

TEST AND EVALUATION, MAINTENANCE, TRANSPORTATION, SKILLS, HUMANS,
TOOLS, COMPUTER ARCHITECTURE, COSTS, BASE LINES, SPECIALISTS

ID (25) NAS(NATIONAL AIRSPACE SYSTEM)

AB (27) Empirical data describing the mix of human abilities required to operate and maintain the future National Airspace System (NAS) architecture are presently lacking. A research program is proposed to develop the scientific tools and collect data to describe and assess the mix of abilities likely to be required of future Federal Aviation Administration air traffic control specialists, electronics technicians, and transportation system specialists. The first phase of the proposed research program is to develop a baseline profile describing the skills, abilities, and knowledge required to use, operate, and maintain the current NAS architecture. The second phase of the program is to develop and apply scientific tools to identify

changes in personnel selection requirements in parallel with air traffic control and maintenance systems development. The third step in the research program is to develop, validate, and deliver new personnel selection technologies to reflect the human ability and performance needs of the future NAS architecture. The research program is designed to provide agency managers with the selection tools needed to manage personnel costs, inevitable generational change in the technical workforces, and technological innovation in air traffic control and maintenance systems.

AN (1) AD-A330 010/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Weather System Processor (WSP) Test and Evaluation Master Plan (TEMP)

DN (9) Technical note

AU (10) Martinez, Radame
Lee, Tai

Stretcher, Baxter
Adamskyj, Cindy

RD (11) Aug 1997

PG (12) 77 Pages

RS (14) DOT/FAA/CT-TN97/13

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR, *ALL WEATHER AVIATION TEST AND EVALUATION, DECISION MAKING, OPERATIONAL EFFECTIVENESS, WEATHER FORECASTING, WIND SHEAR

ID (25) WSP(WEATHER SYSTEM PROCESSOR)

AB (27) This Test and Evaluation Master Plan (TEMP) describes technical and operational testing requirements, general methodology, and responsibilities for the comprehensive system testing of the Weather System Processor (WSP) National Airspace System (NAS) subsystem. This TEMP further establishes an agreement between the developing organization, the user, and the tester to support acquisition decisions, by identifying areas of technical and operational risk, by defining a comprehensive plan to address and resolve the risk, and by providing a structure for reporting the results. The WSP Test and Evaluation Program will ensure that the WSP fulfills the Mission Needs Statement (MNS), meets the requirements in the WSP Requirements Document (RD), applicable NAS requirements, the WSP Specification, applicable Interface Requirements Documents (IRDs), and relevant contractor generated documents that have been approved by the

Government.

AN (1) AD-A331 657/XAG

FG (2) 070400

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) A Fuel Generation Model for Char Forming Polymers in Fires

DN (9) Final rept.

AU (10) Lyon, Richard E.

RD (11) Aug 1997

PG (12) 24 Pages

RS (14) DOT/FAA/AR-97/3

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PYROLYSIS, *PHENOLIC PLASTICS, *FIRE SAFETY REACTION KINETICS, POLYMERS, THERMAL DEGRADATION, FLAMMABILITY, TRIAZINES, CHARRING, COMBUSTION PRODUCTS, THERMOGRAVIMETRIC ANALYSIS

AB (27) A mass loss model for char forming polymers in fires is developed from mechanistic pyrolysis kinetics. Under conditions of flaming combustion the coupled rate equations for thermal degradation products and reactants reduce to a single rate law for the residual mass. Exact results are obtained from the mass loss history which include an equilibrium char yield whose value depends only on the relative rates of gas and char formation at a particular temperature. Reaction rate constants for thermolysis of chemical bonds, gas production, and char formation are determinable from parametric fits of the mechanistic charring model to thermogravimetric data. Predictions of the nonisothermal mass loss during constant heating rate experiments are in agreement with experimental data over the expected range of validity.

AN (1) AD-A328 993/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Review of Air Traffic Controller Selection: An International Perspective.

DN (9) Final rept.

AU (10) Broach, Dana

Manning, Carol A.
RD (11) Jul 1997
PG (12) 27 Pages
RN (18) DOT/FAA/AM-97/15
XH-XD
RC (20) Unclassified report
DE (23) *PERSONNEL SELECTION, *AIR TRAFFIC CONTROLLERS
UNITED STATES, VALIDATION, PERFORMANCE(HUMAN), INTERNATIONAL, JOB
ANALYSIS, SWEDEN, GERMANY(EAST AND WEST), TEST
CONSTRUCTION(PSYCHOLOGY), UNITED KINGDOM
ID (25) FAA(FEDERAL AVAITION ADMINISTRATION)
AB (27) This report provides a review of research on air traffic controller
selection in the United States, Germany, the United Kingdom, and
Sweden. The development and validation of the multiple hurdle selection
system used by the US Federal Aviation Administration (FAA) from 1976
through 1992 is described first. The computer-administered test battery
that supplanted the second-stage screening conducted at the FAA Academy
is discussed next. Work by Eissfeldt for the German Air Navigation
Services at the Aerospace Research Establishment (DLR) in Hamburg is
reviewed. Job analysis, test battery development, and validation
research for the controller occupation in the United Kingdom is
presented next, followed by a description of the Swedish "MRU Project"
on controller selection. The report closes with a discussion of issues
surrounding controller job performance measurement. The advantages and
disadvantages of historical criteria, such as training records, are
reviewed. Alternative approaches to job performance measurement, such
as simulations and operational data replay and analysis, are then
described. The report closes with suggestions for future directions in
controller selection research.

AN (1) AD-A328 997/XAG
FG (2) 170703
050800
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) **Distribution of Attention, Situation Awareness, and Workload in a
Passive Air Traffic Control Task: Implications for Operational Errors
and Automation**
DN (9) Final rept
AU (10) Endsley, Mica R.
Rodgers, Mark D.
RD (11) Jul 1997

PG (12) 25 Pages
RS (14) DOT/FAA/AM-97/13
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *WORKLOAD, *AIR TRAFFIC
CONTROLLERS,
*ATTENTION, *AWARENESS
STRATEGY, MONITORING, REPORTS, PASSIVE SYSTEMS, TIME, ERRORS
AB (27) A study was conducted to investigate factors underlying operational
errors (OEs) in en route air traffic control. Twenty active duty
controllers watched re-creations of OEs and were asked to report on
their situation awareness and workload on two occasions during the
re-creations. A total of 14 OEs were examined. Responses were analyzed
to determine how subjects allocated their attention while viewing the
scenarios. While observed patterns probably reflect necessary
prioritization schemes, attention strategies identified in this study
can be linked to data on factors underlying OEs. Both objective
taskload, as indicated by the number of aircraft being controlled, and
subjective workload were found to be related to controllers' ability to
report situation awareness information. Workload was found to be higher
at the time of the OE than at the other stop during the re-creation.
During high workload, controllers appeared to reduce attention paid to
certain aircraft and variables to maintain awareness of more important
information. Implications of this research are drawn for potential
problems in situation awareness under passive monitoring conditions
that may be present if certain forms of automation are introduced in
the future air traffic control system.

AN (1) AD-A328 998/XAG
FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) **Personality Characteristics of Pre/Post-Strike Air Traffic Control
Applicants**
DN (9) Final rept
AU (10) Schroeder, David J.
Dollar, Carolyn S.
RD (11) Jul 1997
PG (12) 20 Pages
RS (14) DOT/FAA/AM-97/17
RN (18) XH-XD
RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *PERSONALITY
JOBS, DECISION MAKING, AIR TRAFFIC CONTROL SYSTEMS, WORK

AB (27) The 16 Personality Factors (16PF) test has been routinely administered to personnel applying for Air Traffic Control Specialist (ATCS) positions within the Federal Aviation Administration for more than 3 decades. This study was designed to assess the relationship between personality characteristics of a group of post-strike applicants (1984) with data gathered in the late 1960s to early 1970s (Karson and O'Dell, 1974). Additionally, the comparisons provide a baseline with which to assess characteristics of the new controllers who will start to enter the workforce as the post-strike workforce begins to retire following the year 2000. Outcomes were consistent with previous findings, in revealing that female and male ATCS applicants are brighter than the average individual. When compared with the general population norms, the applicant groups are less anxious, report higher self-discipline, and are more emotionally stable. They are also more self-reliant and assertive. These characteristics appear to be ideally suited for applicants to an occupation that requires quick decision-making and calm, thoughtful responses during emergencies.

AN (1) AD-A328 999/XAG
FG (2) 010100
010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
RESEARCH
TI (6) Video Landing Parameter Survey - John F. Kennedy International Airport.
DN (9) Final rept.
AU (10) DeFiore, Thomas
Micklos, Richard
Micklos, Richard
RD (11) Jul 1997
PG (12) 63 Pages
RS (14) DOT/FAA/AR-96/125
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIRCRAFT LANDINGS, *APPROACH
ANGLES, ROLL, PITCH(INCLINATION), YAW, PARAMETERS, RATES, SURVEYS,
AIRCRAFT DESIGN
ID (25) *LANDING PARAMETERS, SINK RATES, APPROACH VELOCITY
AB (27) The Federal Aviation Administration William J. Hughes Technical Center is conducting a series of video landing parameter surveys at high-capacity commercial airports to acquire a better understanding of

typical contact conditions for a wide variety of aircraft and airports as they relate to current aircraft design criteria and practices. The initial parameter landing survey was conducted at John F. Kennedy (JFK) International Airport in June 1994. Four video cameras were temporarily installed along the north apron of runway 13L. Video images of 614 transport (242 wide-body, 264 narrow-body, and 108 commuter aircraft) were captured, analyzed, and the results presented herein. Landing parameters presented include sink rate; approach speed; touchdown pitch, roll, and yaw angles and rates; off-center distance; and the distance from the runway to the threshold. Wind and weather conditions were also recorded and landing weights were available for most landings. Since this program is only concerned with the overall statistical usage information, all data were processed and are presented without regard to the airline or the flight number. Subsequent surveys have been conducted at Washington National runway 36 and at Honolulu International runway 8L, and these results will be reported in future technical reports.

AN (1) AD-A329 009/XAG
FG (2) 010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) An Evaluation of Safety Seminars
DN (9) Final rept
AU (10) Hunter, David R.
RD (11) Jul 1997
PG (12) 41 Pages
RS (14) DOT/FAA/AM-97/16
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *TRAINING, *PILOTS, *AVIATION SAFETY, *WORKSHOPS
MAINTENANCE, ORGANIZATIONS, AIRCRAFT
AB (27) Four versions of an evaluation form, each of which had a set of common items, were distributed at safety seminars conducted by the Federal Aviation Administration. These evaluation forms assessed participant satisfaction with seminars, perceptions of the seminar content and the presenter, frequency of attendance at seminars, aviation qualifications and experience, seminar content, format and venue preferences, access to computer and video technology for training delivery, self-perceived knowledge and proficiency, training activities, and maintenance activities. Seminar evaluation forms were received for 226 seminars, representing approximately 66% of the FAA Flight Standards District

Offices. A total of 5,615 seminar forms were received, approximately equally divided among the four form versions. This represents approximately 44% of the reported attendance at the 226 safety seminars. Seminar participants consistently rated the seminars favorably. Of the participants, 99% reported that they were satisfied with the seminar, 99% would recommend seminars to fellow pilots, and 96% either definitely or probably will attend another safety seminar in the next year. Data on computer and video ownership and use suggest that computer-based training might be a feasible means for disseminating training programs. Over half of the participants reported membership in at least one flying organization, and almost half reported that they had performed some preventive maintenance on an aircraft during the previous six months. The data provided by the study may be used to guide the content and format of future seminars, while supporting the development of alternative forms of training delivery.

AN (1) AD-A329 026/XAG

FG (2) 010200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Stereochemical Determination of Selegiline Metabolites in Postmortem Biological Specimens.

DN (9) Final rept.

AU (10) Kupiec, T. C.
Chaturvedi, A. K.

RD (11) Jul 1997

PG (12) 13 Pages

RN (18) DOT/FAA/AM-97/14
XH-XD

RC (20) Unclassified report

DE (23) *SAMPLING, *AVIATION ACCIDENTS, *MEDICAL SERVICES, *METABOLITES,
*TOXICOLOGY

AIRCRAFT, BIOLOGY, MOLECULES, ISOLATION, RESEARCH FACILITIES,
AMINES,

CHLORIDES, CASUALTIES, VOLATILITY, LABORATORIES, DRUGS,
IMMUNOASSAY,

GAS CHROMATOGRAPHY, BLOOD, URINE, AUTOPSY, MASS SPECTROMETRY,
COMBUSTION PRODUCTS, AMPHETAMINES, LEVODOPA

ID (25) SELEGILINE METABOLITES, METHAMPHETAMINE, AMPHETAMINE,
ENANTIOMERS,

DIASTETEOMERS, PARKINSON'S DISEASE, AIRCRAFT ACCIDENT INVESTIGATION

AB (27) The Federal Aviation Administration's Toxicology and Accident Research

Laboratory determines the presence of drugs, volatiles, and primary combustion gases in biological samples from aircraft accident victims and also establishes any medical condition for which the drugs might have been taken. In this study, findings related to an aircraft accident are reported. Along with biological specimens from the pilot of this fatal accident, two types of tablets found at the accident scene were submitted for analysis. These tablets were identified as levodopa and selegiline, commonly prescribed for the treatment of Parkinson's disease. Selegiline, a stereospecific compound, is biotransformed into (-)-N-desmethylselegiline, (-)-methamphetamine, and (-)-amphetamine. During this process, the chiral center of the parent molecule is not affected. The latter two levorotatory metabolites cannot be easily distinguished by routine analysis from their dextrorotatory isomers, which are controlled substances. Therefore, it was prudent to differentiate these isomers to prove or disprove the controlled substance categorization. Initial immunoassay drug screenings revealed the presence of amphetamine class drugs (867 ng/ml) and amphetamine/methamphetamine (261 ng/ml) in urine and methamphetamine (46 ng/ml) in blood. The gas chromatography-mass spectrometry (GC/MS) results revealed the presence of methamphetamine in the concentrations of 76 ng/ml of blood and 685 ng/ml of urine. The level of amphetamine was 52 ng/ml in blood and 320 ng/ml in urine. To determine the stereospecificity of these amines, the isolated amines from the biosamples were derivatized by a stereospecific agent, (S)-(-)-N-(trifluoroacetyl)prolyl chloride, and characterized by a GC/MS method to be levorotatory. The 2.14 ratio of (-)-methamphetamine to (-)-amphetamine concentrations in the urine was consistent with a sele

AN (1) AD-A329 055/XAG

FG (2) 010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Flight 2000, Path to Free Flight: Initial Program Plan.

RD (11) 16 Jul 1997

PG (12) 172 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS

INTEGRATED SYSTEMS, COST ESTIMATES, EFFICIENCY, PLANNING, AVIATION

SAFETY, SYSTEMS MANAGEMENT, NATIONAL TRANSPORTATION SYSTEM
ID (25) *FLIGHT 2000 PROGRAM, PROCEDURES, CNS(COMMUNICATION NAVIGATION
AND

SURVEILLANCE), ADVANCED TECHNOLOGY

AB (27) Flight 2000 is an aggressive initiative to deploy and evaluate selected planned air traffic management systems for the year 2005 NAS. Flight 2000 integrates for the first time the requisite systems, procedures, and training necessary to provide improved NAS safety, security, productivity, capacity, and efficiency at affordable operations and maintenance costs. This integrated demonstration and validation will begin in September 2000. The purpose of the Flight 2000 Initial Program Plan is to provide the reader with a strategic overview and details available at this stage in the planning process. The information includes: an overview of the driving forces and vision behind Flight 2000; a discussion of the customers and partners; a depiction of the benefits to be realized; a delineation of the operational concepts that will deliver those benefits; a presentation of the service architecture which will support the operational concepts; details of the capabilities that enable implementation of the service architecture; strategies to improve the certification of those technologies; a schedule for implementing these strategies; and a cost estimate for Flight 2000 based upon the above information.

AN (1) AD-A331 759/XAG

FG (2) 010300
201100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

OFFICE OF AVIATION RESEARCH

TI (6) Proceedings of the FAA-NASA Symposium on the Continued Airworthiness of
Aircraft Structures. Volume 1.

AU (10) Bigelow, Catherine A.

RD (11) Jul 1997

PG (12) 330 Pages

RN (18) DOT/FAA/AR-97/2-VOL-1
XH-XD

RC (20) Unclassified report

NO (21) ADA331760

DE (23) *CRACKING(FRACTURING), *AIRFRAMES, *FATIGUE(MECHANICS)
MATHEMATICAL MODELS, CORROSION, LIFE EXPECTANCY(SERVICE LIFE),

CRACK

PROPAGATION, LONG LIFE, AIRWORTHINESS

ID (25) AUTOMATED EVALUATIONS, CRACK DETECTION, RESIDUAL STRENGTH,

NONDESTRUCTIVE INSPECTION

AB (27) This publication contains the fifty-two technical papers presented at the FAA-NASA Symposium on the Continued Airworthiness of Aircraft Structures. The symposium, hosted by the FAA Center of Excellence for Computational Modeling of Aircraft Structures at Georgia Institute of Technology, was held to disseminate information on recent developments in advanced technologies to extend the life of high-time aircraft and design longer-life aircraft. Affiliations of the participants included 33% from government agencies and laboratories, 19% from academia, and 48% from industry; in all 240 people were in attendance. Technical papers were selected for presentation at the symposium, after a review of extended abstracts received by the Organizing Committee from a general call for papers.

AN (1) AD-A331 760/XAG

FG (2) 010300
201100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

OFFICE OF AVIATION RESEARCH

TI (6) Proceedings of the FAA-NASA Symposium on the Continued Airworthiness of
Aircraft Structures. Volume 2.

AU (10) Bigelow, Catherine A.

RD (11) Jul 1997

PG (12) 346 Pages

RN (18) DOT/FAA/AR-97/2-VOL-2
XH-XD

RC (20) Unclassified report

NO (21) ADA331759

DE (23) *CRACKING(FRACTURING), *AIRFRAMES, *FATIGUE(MECHANICS)
MATHEMATICAL MODELS, CORROSION, NONDESTRUCTIVE TESTING, LIFE
EXPECTANCY(SERVICE LIFE), CRACK PROPAGATION, LONG LIFE,
AIRWORTHINESS

ID (25) AUTOMATED EVALUATIONS, CRACK DETECTION, NONDESTRUCTIVE
INSPECTION,

RESIDUAL STRENGTH

AB (27) This publication contains the fifty-two technical papers presented at the FAA-NASA Symposium on the Continued Airworthiness of Aircraft Structures. The symposium, hosted by the FAA Center of Excellence for Computational Modeling of Aircraft Structures at Georgia Institute of Technology, was held to disseminate information on recent developments in advanced technologies to extend the life of high-time aircraft and design longer-life aircraft. Affiliations of the participants included

33% from government agencies and laboratories, 19% from academia, and 48% from industry; in all 240 people were in attendance. Technical papers were selected for presentation at the symposium, after a review of extended abstracts received by the Organizing Committee from a general call for papers.

AN (1) AD-A329 207/XAG

**FG (2) 230200
250400**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Human Factors Recommendations for Airborne Controller-Pilot Data Link Communications (CPDLS) Systems: A Synthesis of Research Results and Literature.

DN (9) Technical note

AU (10) Rehmann, Albert J.

RD (11) Jun 1997

PG (12) 93 Pages

RS (14) DOT/FAA/CT-TN97/6

CT (15) SPO900-94-D-0001

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *HUMAN FACTORS ENGINEERING POSITION(LOCATION), DEPARTMENT OF DEFENSE, FLIGHT CREWS, SYNTHESIS,

DISPLAY SYSTEMS, DATA LINKS

ID (25) CPDLC(CONTROLLER-PILOT DATA LINK COMMUNICATIONS), ADLG(AIRBORNE DATA

LINK GROUP), ATC(AIR TRAFFIC CONTROL), DEPARTMENT OF TRANSPORTATION

AB (27) This document provides a synthesis of research results and literature culminating in specific human factors recommendations for Controller-Pilot Data Link Communications (CPDLC) systems. The report concentrates on two major human factors top areas; system operability, and system implementation. System operability includes issues such as display location, crew alerting, and message formatting, etc. System implementation includes issues such as situation awareness/party line, airspace environment, mixed modality communications, etc. The findings provide a synthesis of past Data Link research and specifically address the work performed by or supported by the Technical Center's Airborne Data Link Group (ADLG) over the past several years. The goal of the Technical Center's research is to support rulemaking, certification, and the testing of air traffic control (ATC) systems in end-to-end

environments.

AN (1) AD-A326 753/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Baseline Assessment of the National Association of Air Traffic Specialists/Federal Aviation Administration Partnership.

DN (9) Final rept.

AU (10) Thompson, Richard C.

Hilton, Thomas F.

Behn, Lydia D.

RD (11) May 1997

PG (12) 32 Pages

RS (14) DOT/FAA/AM-97/12

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ORGANIZATIONS, *EMPLOYEE RELATIONS

DECISION MAKING, PERSONNEL MANAGEMENT, PERFORMANCE(HUMAN),

MORALE, BASE

LINES, TABLES(DATA), AIR TRAFFIC, COOPERATION, NEGOTIATIONS,

BARGAINING

ID (25) *NFP(NAATS AND FAA PARTNERSHIP), NAATS (NATIONAL ASSOCIATION OF AIR

TRAFFIC SPECIALISTS), FAA(FLIGHT AVIATION ADMINISTRATION), EMPLOYEE

EMPOWERMENT, EMPLOYEE INVOLVEMENT

AB (27) The Federal Aviation Administration's (FAA's) Flight Service Station (FSS) management and the leadership of the National Association of Air Traffic Specialists (NAATS) requested a baseline assessment of organizational climate prior to full implementation of NAATS/FAA Partnership (NFP) teams. The stated purpose of the NFP teams is to increase employee empowerment and improve decision-making and coordination within the organization.

AN (1) AD-A327 689/XAG

FG (2) 040200

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Route Surveillance Radar Model 4 (ARSR-4) Operational Test and

Evaluation (OT&E) Final Report.

- DN (9) Technical note
AU (10) Healy, Thomas A.
McDonald, Raymond K.
Pomrink, Robert F.
Conklin, William P.
RD (11) May 1997
PG (12) 234 Pages
RS (14) DOT/FAA/CT-TN96/26
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *METEOROLOGICAL RADAR TEST AND EVALUATION, ALGORITHMS, OUTPUT, REQUIREMENTS, UNITED STATES, COASTAL REGIONS, CAPACITY(QUANTITY), RESOLUTION, REPORTS, ISOLATION, OPERATIONAL EFFECTIVENESS, SHORT RANGE(TIME), LONG RANGE(DISTANCE), CUBA, POWER, LOSSES, MESSAGE PROCESSING, HAWAII, FAULTS, GUAM
ID (25) ARSR-4(AIR ROUTE SURVEILLANCE RADAR-4)
AB (27) The Air Route Surveillance Radar Model 4 (ARSR-4) is a state-of-the-art, three-dimensional, long-range radar. The system is being jointly procured by the Federal Aviation Administration (FAA) and the U.S. military. This radar will replace aging height-finding and long-range two-dimensional air search radars which are currently in use. Forty-four ARSR-4 systems are scheduled for installation around the coastal United States and in Hawaii, Guam, and Guantanamo Bay, Cuba. This report presents the results of the Operational Test and Evaluation (OT&E) of the ARSR-4 radar system. OT&E integration and Operational tests were conducted in accordance with FAA order 1810.4B to verify that the ARSR-4 is operationally suitable and effective and can meet operational requirements when integrated into the National Airspace System (NAS). Test results revealed that the ARSR-4 performs most basic functions well. Improved coverage was noted in areas with a history of poor coverage. Results also revealed that the ARSR-4 can process and provide message outputs for a capacity load within the primary coverage area. Controller comments were generally favorable although several problems were identified during testing. The ARSR-4 at Mt. Laguna had a significantly higher beacon split rate than the ARSR-3. The ARSR-4 did not perform reliably during the test period. The number of critical operational problems encountered was excessive. The ARSR-4 did not consistently recover from a short-term power loss. Several power related problems were discovered. Problems were also discovered with the ARSR-4 Built-in Test (BIT) and Fault Isolation Test

(FIT) functions and resolution algorithms.

- AN (1) AD-A324 719/XAG
FG (2) 010600
060500
061000
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE
TI (6) Effects of Mild Hypoxia on Pilot Performances at General Aviation Altitudes.
DN (9) Final rept.
AU (10) Nesthus, Thomas E.
Rush, Ladonna L.
Wreggit, Steven S.
RD (11) Apr 1997
PG (12) 43 Pages
RS (14) DOT/FAA/AM-97/9
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *STRESS(PHYSIOLOGY), *PHYSIOLOGICAL EFFECTS, *HYPOXIA, *ALTITUDE, *FLIGHT SIMULATION, *OXYGEN CONSUMPTION, *PRESSURE BREATHING SCENARIOS, PILOTS, TERRAIN, VARIABLES, TOLERANCE, CIVIL AVIATION, RESPONSE(BIOLOGY), ELEVATION, SEA LEVEL, COMPRESSED AIR, AVIATION MEDICINE
AB (27) General aviation pilots may fly continuously at altitudes up to 12,500 ft. without the use of supplemental oxygen. However, hypoxia is a condition that can develop at altitudes under 12,500 ft. Research has shown highly variable tolerance and performance of individuals during low altitude laboratory exposures with simple and complex tasking. This study evaluated the physiological and subjective responses, as well as the simulated flight performance of general aviation pilots during a cross-country flight scenario. Ten pilots of a mild hypoxia group were compared with 10 pilots of a normoxic control group. Measurements of flight performance from the Basic General Aviation Research Simulator (BGARS) and of flight-following procedures were gathered during a 3-day, 2 hr. per day, cross-country flight scenario. Determined by group membership and terrain elevation during the cross-country flight, subjects breathed either oxygen mixtures simulating sea level, 8,000 ft., 10,000 ft., and 12,500 ft. altitudes or compressed air, throughout.

AN (1) AD-A325 978/XAG

FG (2) 010300
110400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION RESEARCH

TI (6) Handbook: Manufacturing Advanced Composite Components for Airframes.

DN (9) Final rept.

AU (10) Price, Terry L.

Dalley, George

McCullough, Patrick C.

Choquette, Lee

RD (11) Apr 1997

PG (12) 226 Pages

RS (14) DOT/FAA/AR-96/75

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMPOSITE MATERIALS, *AIRFRAMES

METHODOLOGY, INDUSTRIES, AIRCRAFT, MANUFACTURING, MACHINING, REPAIR,

FORMATS, STANDARDS, BACKGROUND, CIVIL AVIATION, PARTS, QUALITY ASSURANCE, HANDBOOKS, AIRWORTHINESS, FIBER REINFORCEMENT

AB (27) This handbook is a compendium of information on methods of manufacture of advanced composite components for airframes. It is aimed at familiarizing the reader with the common industry standards and aspects of using composites in aircraft applications. The handbook is intended to aid Federal Aviation Administration (FAA) personnel in assessing airworthiness of composite parts in civilian aircraft. The contents are drawn from various sources and are condensed into an easy-to-read, but comprehensive format. The contents of this handbook include introductory background on composite materials utilizing fiber reinforcements, matrix systems, core types and styles, handling, related practices found in the manufacturing and fabrication as well as the use of these materials, the concepts of producing parts utilizing tooling, various manufacturing methodologies, processing, machining, quality assurance, assembly, repair, and related safety and environmental issues. These topics are considered essential for proper assessment of the manufacturing qualities and the continued airworthiness of composite parts used in civil aviation today and in the future.

AN (1) AD-A326 465/XAG

FG (2) 120600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Evaluation of a Range of Target Blink Amplitudes for Attention-Getting Value in a Simulated Air Traffic Control Display.

DN (9) Final rept.

AU (10) Milburn, Nelda J.

Mettens, Henry W.

RD (11) Apr 1997

PG (12) 10 Pages

RN (18) DOT/FAA/AM-97/10

XH-XD

RC (20) Unclassified report

DE (23) *TARGETS, *AIR TRAFFIC CONTROL SYSTEMS, *CATHODE RAY TUBES STEADY STATE, RATIOS, CONTRAST, SIZES(DIMENSIONS), REACTION TIME,

TIME,

BRIGHTNESS, LUMINANCE

AB (27) Several sources suggest that blinking targets are more alerting than steady targets. Those sources recommend target size, color, shape, brightness contrast, frequency of blink, and parameters for the ratio of time the blink should be 'on,' relative to the time it is 'off' However, no guidelines were found for an effective, attention-getting blink amplitude (the percentage of decrease in target brightness from a standard). Ten participants located and selected the blinking information data blocks (targets) from 16 data blocks on a Simulated Air Traffic Control Display. Seven blink amplitudes, ranging from 12.5% to 100%, were evaluated. Error and response time performance were near optimum for conditions involving a 75% to 100% decrease in brightness. For the standard luminance (51.4 Cd/m²), frequency (2 HZ), and duration (.10 sec) used in this experiment, a decrease in brightness of at least 75% was necessary for maximum attention-getting value of a blinking target.

AN (1) AD-A322 723/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) FAA Aviation Forecasts, Fiscal Years 1997-2008.

RD (11) Mar 1997

PG (12) 227 Pages

RS (14) FAA-APO-97-1

RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIR TRANSPORTATION CONTROL, STATIONS, UNITED STATES, AIRCRAFT, AIRCRAFT INDUSTRY, CONTRACTS, ECONOMICS, GROWTH(GENERAL), FORECASTING, TOWERS, AERONAUTICS, COSTS, FUELS, FLIGHT, PLANNING, CIVIL AVIATION, AIRPORTS, PASSENGERS
AB (27) This report contains the Fiscal Years 1997-2008 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with both FAA and contract control towers, air route traffic control centers, and flight service stations. Detailed forecasts were developed for the major users of the National Aviation System: air carriers, air taxi/commuters, general aviation, and military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information which can be used by State and local authorities, the aviation industry, and the general public. The outlook for the 12-year forecast period is for moderate economic growth, declining real fuel prices, and modest inflation. Bases on these assumptions, aviation activity is forecast to increase by 17.0 percent at the combined FAA and contract towered airports (443 in 1996) and 24.6 percent at air route traffic control centers. The general aviation active fleet is forecast to increase by almost 8.4 percent while general aviation hours flown grow by almost 12.9 percent. U.S. scheduled domestic passenger enplanements are forecast to increase 61.3 percent--air carriers increasing 58.0 percent and regional/commuters growing by 85.9 percent. Total international passenger traffic between the United States and the rest of the world is projected to increase 93.7 percent. International passenger traffic carried on U.S. flag carriers is forecast to increase 95.8 percent.

AN (1) AD-A323 899/XAG
FG (2) 010600
061000
050800

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Effects of Simulated General Aviation Altitude Hypoxia on Smokers and Nonsmokers.

DN (9) Final rept.

AU (10) Nesthus, Thomas E.
Garner, Robert P.

Mills, Scott H.
Wise, Robert A.
RD (11) Mar 1997
PG (12) 63 Pages
RS (14) DOT/FAA/AM-97/7
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *PERFORMANCE(HUMAN), *PILOTS, *HYPOXIA, *TOBACCO SMOKING GROUP DYNAMICS, HUMAN FACTORS ENGINEERING, OXYGEN, HIGH ALTITUDE, CIVIL AVIATION, EXPOSURE(PHYSIOLOGY), RESPONSE(BIOLOGY), JUDGEMENT(PSYCHOLOGY), FLIGHT SIMULATION, HEART RATE, PERCEPTION(PSYCHOLOGY), APTITUDE TESTS, BREATHING GASES, REACTION(PSYCHOLOGY), PERIPHERAL VISION, INTELLIGENCE TESTS, HYPERVENTILATION, OXYGEN MASKS, NICOTINE
AB (27) General aviation pilots are permitted to fly without the use of supplemental oxygen up to an altitude of 12,500 ft. However, hypoxia occurs at altitudes under 12,500 ft. Personal lifestyle, physical conditioning, and illness can interact with hypoxia to affect performance. This study evaluated physiological and cognitive performance of smokers and nonsmokers during sessions of mild hypoxia. Nine male smokers and 9 nonsmokers performed the Multi-Attribute Task Battery (MATB) while breathing oxygen mixtures that simulated sea level, 5,000 ft., 8,000 ft., and 12,500 ft. altitude conditions. Four physiological measures: transcutaneous partial pressures of oxygen and carbon dioxide (P(tc)O2 and P(tc)CO2), heart rate (HR), and oxyhemoglobin saturation (SaO2), demonstrated significant trends across the simulated altitude conditions and for some measures, between groups. Results of the physiological measures obtained, confirmed the study's targeted levels of hypoxia. Smokers exhibited elevated HR and lower P(tc)CO2 values, compared with nonsmokers. Elevated HR is consistent with nicotine effects. Reduced P(tc)CO2 values may indicate greater hyperventilation among the smokers. Smokers may have experienced a reduction of peripheral vision and their ability to visually monitor several tasks simultaneously.

AN (1) AD-A324 677/XAG
FG (2) 131200
050100

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Where the Safety Rubber Meets the Shop Floor: A Confirmatory Model of

Management Influence on Workplace Safety.

DN (9) Final rept.
AU (10) Thompson, Richard C.
Witt, L. A.
Hilton, Thomas F.
RD (11) Mar 1997
PG (12) 12 Pages
RN (18) DOT/FAA/AM-97/8
XH-XD
RC (20) Unclassified report
AL (22) Availability: National Technical Information Service Springfield, VA
22161. No copies furnished by DTIC.
DE (23) *MANAGEMENT, *SAFETY
JOBS, ENVIRONMENTS, ORGANIZATIONS, BEHAVIOR,
PERCEPTION(PSYCHOLOGY),
SHOPS(WORK AREAS)
ID (25) ORGANIZATIONAL CLIMATE, SAFETY CLIMATE, SAFETY PERCEPTIONS
AB (27) The role of management in establishing a safe work environment remains
a topic that receives less attention in the literature than it
deserves. There is little empirical evidence that validates the
important role management plays in establishing a climate that sustains
safe job behaviors. This paper presents a model that links management
support, organizational climate, and self-reported safety outcomes.
21

AN (1) AD-A325 356/XAG
FG (2) 010300
131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE
ADMINISTRATOR
FOR RES EARCH AND ACQUISITIONS
TI (6) A Study of the Continued Fire Worthiness of Aircraft Seat Cushion
Fire-Blocking Layers.
DN (9) Final rept.
AU (10) Ingerson, Doug
RD (11) Mar 1997
PG (12) 30 Pages
RS (14) DOT/FAA/AAR-422
RN (18) DOT/FAA/AR-95/49
XH-XD
RC (20) Unclassified report
NO (21) Original contains color plates: All DTIC reproductions will be in black
and white.

DE (23) *PADS(CUSHIONS), *AIRCRAFT SEATS, *FIRE SAFETY
TEST AND EVALUATION, UNITED STATES GOVERNMENT, COMMERCIAL
AIRCRAFT,
POLYAMIDE PLASTICS, ENDURANCE(GENERAL), BLOCKING, AVIATION SAFETY,
WEIGHT REDUCTION, BURNERS, OIL BURNERS, POLYBENZIMIDAZOLE
AB (27) The continued fire endurance of fire-blocked aircraft seat cushions
after service wear and tear was evaluated based on in-service
examinations performed on commercial aircraft and sample testing of
donated cushions per the oil burner test contained in Part 25, Appendix
F, Pan II of the Federal Aviation Regulations. A total of 176
examinations took place onboard aircraft to evaluate the condition of
the in-service aircraft seats. A comparison was made between the
observed conditions of the in-service seat cushions and the 38 used
seat cushion sets that were donated for this project. The comparison
indicated that the donated used aircraft cushion sets were
representative of actual in-service conditions. The donated cushion
sets were then evaluated for continued fire worthiness with the
aircraft cushion oil burner test. Eight pairs were retained in stock
condition and the remaining 30 pairs were altered to a 'modified' test
configuration. The test results included the weight loss profile for
each cushion set burnt. The test results indicated that there were no
significant fire endurance problems with the fire-blocking materials
that were composed of Kevlar, Nomex, and/or polybenzimidazole (PBI)
components.

AN (1) AD-A326 779/XAG
FG (2) 050200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Symbol Development Guidelines for Airway Facilities.
DN (9) Technical note Feb-Dec 95
AU (10) Wagner, Dan
Snyder, Michael
Dutra, Lisa
Dolan, Nancy
RD (11) Mar 1997
PG (12) 32 Pages
RS (14) DOT/FAA/CT-TN96/3
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *DISPLAY SYSTEMS
DECISION MAKING, CODING, GUIDANCE, VISION, SYMBOLS, AUDITORY
SIGNALS

ID (25) *SYMBOL DEVELOPMENT, AF(AIRWAY FACILITIES), PICTORIAL
AB (27) This document presents a general methodology for developing Airway Facilities (AF) symbols and provides guidelines for the coding of visual symbols and auditory signals. Coding refers to the characteristics of a symbol that developers can change to improve its interpretation or message content. These coding guidelines should not be considered exhaustive but rather represent a compilation of the most important items to consider when developing visual or auditory symbols. The decision to use a visual symbol, an auditory signal, or both, will depend on the nature of the displayed information, operational conditions, and users requirements. A list of questions for determining the best coding technique is provided. AF symbols represent facilities, equipment, services, and status information such as alarms and alerts. These guidelines also provide a systematic methodology for developing symbols that will help in the creation and testing of effective symbols.

AN (1) AD-A322 708/XAG

**FG (2) 010200
060500**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

TI (6) Inflight Medical Care: An Update.

DN (9) Final rept.

AU (10) DeJohn, Charles A.
Veronneau, Stephen J.
Hordinsky, Jerry R.

RD (11) Feb 1997

PG (12) 13 Pages

RS (14) DOT/FAA/AM-97/2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *EMERGENCIES, *INFLIGHT, *MEDICAL SERVICES, *AVIATION MEDICINE
INDUSTRIES, REPORTS, SIGNS AND SYMPTOMS, COMMERCIAL AVIATION,
INTERNATIONAL AIRPORTS, DOMESTIC, HOSPITALIZATIONS, AIR
TRANSPORTATION,

LOS ANGELES(CALIFORNIA), LANDING, AIRCRAFT CABINS

AB (27) A major concern in aviation medicine is the cabin inflight emergency that may result in the diversion of a flight. At the present time there is no convenient way to monitor the incidence of inflight medical emergencies because airline companies are not regularly required to report medical emergencies or resulting diversions. A survey of one

major US airline revealed that one out of every one million passengers may be deplaned by an unscheduled landing because of a life-threatening medical emergency. During a two-year FAA survey of US domestic flights there were 2,322 inflight medical emergencies, averaging approximately three per day, which resulted in an annual diversion rate of approximately 9%. In a 1989 study, inflight emergencies among arriving passengers at the Los Angeles International airport were analyzed. During the six-month period of the investigation 0.003% of 8.5 million passengers developed symptoms in flight that required follow-up assistance on the ground, and 10% of these passengers required hospitalization. A survey of the status of inflight medical care aboard domestic US air carriers was undertaken to determine the impact of current changes in the airline industry. Information for the years 1990 to 1993 was obtained from two airlines and two inflight medical care delivery companies, representing a total of nine major US Part 121 air carriers. This sample accounted for approximately 65% of US domestic air carrier activity for the period 1990 to 1993. The information was reviewed to determine which category of inflight medical emergency occurred most frequently and which category accounted for the greatest number of diversions. The trend in the frequency of diversions for medical reasons was also assessed. The impact of inflight medical advice was then evaluated by comparing the number of diversions that resulted in hospitalizations to the numb

AN (1) AD-A322 774/XAG

**FG (2) 050800
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST**

**TI (6) The Effects of Video Game Experience on Computer-Based Air Traffic
Controller Specialist, Air Traffic Scenario Test Scores.**

DN (9) Final rept.

AU (10) Young, Willie C.
Broach, Dana
Farmer, William L.

RD (11) Feb 1997

PG (12) 13 Pages

RS (14) DOT/FAA/AM-97/4

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *AIR TRAFFIC CONTROLLERS, *PSYCHOMOTOR
TESTS

COMPUTERIZED SIMULATION, SKILLS, JOB TRAINING, COGNITION, PSYCHOMOTOR FUNCTION, REGRESSION ANALYSIS, COMPUTER GRAPHICS, VISUAL PERCEPTION, MAN COMPUTER INTERFACE, PERSONNEL SELECTION, SPACE PERCEPTION, APTITUDES, LEARNING CURVES, CONDITIONING(LEARNING)

ID (25) VIDEO GAMES

AB (27) The FAA is currently using the Air Traffic Scenario Test (ATST) as a major portion of its selection process. Because the ATST is a PC based application with a strong resemblance to a video game, concern has been raised that prior video game experience might have a moderating effect on scores. Much of the previous research in this area is associated with topics such as the moderating effects of prior computer experience on scores earned on computerized versions of traditional achievement or power tests, and the effects of practice on video games on individual difference tests for constructs such as spatial ability. The effects of computer or video game experience on work sample scores have not been systematically investigated. The purpose of this study was to evaluate the incremental validity of prior video game experience over that of general aptitude as a predictor of work sample test scores. The Computer Use Survey was administered to 404 air traffic control students who entered the FAA ATCS Nonradar Screen. The resultant responses from this survey related to video games were summed and averaged to create the predictor (VIDEO). Three criterion measures derived from the ATST, (ATSAFE, ARVDELAY, HNDDELAY) were regressed on the cognitive aptitude measure that serves as the initial selection screening test and the predictor (VIDEO). Self-reported experience on video games was found to be significantly related to ARVDELAY and HNDDELAY, accounting for an additional 3.6% of the variance in ARVDELAY, and accounting for an additional 9% of the variance in HNDDELAY. The results suggested that those persons with video game experience were more efficient at hand-offs and routing aircraft. Future research is recommended to investigate the effect of prior video game experience on learning curves and strategies used in the work sample test.

AN (1) AD-A322 896/XAG

FG (2) 040200
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Weather and Radar Processor (WARP) Operational Capabilities Test (OCT) report.

DN (9) Technical note

AU (10) Benner, William
Malitsky, Christopher
Nguyen, Tri
Printy, Matthew

RD (11) Feb 1997

PG (12) 40 Pages

RS (14) DOT/FAA/CT-TN96/21

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR
REAL TIME, DEMONSTRATIONS, PROCESSING EQUIPMENT, OPERATIONAL
EFFECTIVENESS, METEOROLOGICAL DATA

ID (25) WARP(WEATHER AND RADAR PROCESSORS), OCT(OPERATIONAL
CAPABILITIES

TESTS), MWP(METEOROLOGICAL WEATHER PROCESSORS)

AB (27) This Weather and Radar Processor (WARP) Operational Capabilities Test (OCT) Report documents the results and events of the OCT conducted by Harris Corporation on January 23 through 25, 1996. The objective of the OCT was to provide an operational demonstration of a complete WARP Stage 0 system using real time weather data. Test results, conclusions, and recommendations are based on comparison of data received from the proposed WARP system and the current operational Meteorologist Weather Processor (MWP).

AN (1) AD-A323 690/XAG

FG (2) 010600
131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Development of a Minimum Performance Standard for Lavatory Trash Receptacle Automatic Fire Extinguishers.

DN (9) Final rept.

AU (10) Marker, Timothy

RD (11) Feb 1997

PG (12) 62 Pages

RS (14) DOT/FAA/AAR-422

RN (18) DOT/FAA/AR-96-122
XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT FIRES, *FIRE EXTINGUISHERS, *GARBAGE
COMMERCIAL AIRCRAFT, COMMERCIAL AVIATION, AVIATION ACCIDENTS,
AVIATION

SAFETY, FIRE EXTINGUISHING AGENTS, AUTOMATIC, FLUORINATED
HYDROCARBONS,
FIRE PREVENTION, AIRCRAFT CABINS, FIRE HAZARDS, GARBAGE DISPOSAL
ID (25) HALON 1301

AB (27) This report contains a summary of the work performed during the development of a minimum performance standard for lavatory trash receptacle automatic fire extinguishers. The developmental work was performed under the direction of the International Halon Replacement Working Group.

AN (1) AD-A324 727/XAG

FG (2) 010600
050900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) The Development and Evaluation of a Behaviorally Based Rating Form for
Assessing Air Traffic Controller Performance.

DN (9) Technical note

AU (10) Sollenberger, Randy L.
Stein, Earl S.
Gromelski, Stan

RD (11) Feb 1997

PG (12) 60 Pages

RS (14) DOT/FAA/CT-TN96/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RATINGS, *PROFICIENCY, *AIR TRAFFIC CONTROLLERS
OBSERVERS, SIMULATION, JOB TRAINING, PERFORMANCE TESTS,
OPERATIONAL

EFFECTIVENESS, AVIATION SAFETY, JUDGEMENT(PSYCHOLOGY), FLIGHT
SIMULATION, QUESTIONNAIRES, PERCEPTION(PSYCHOLOGY), TEST
CONSTRUCTION(PSYCHOLOGY), TRAINING FILMS

AB (27) The evaluation of air traffic controller performance is a complex process. While there are standard forms in field use, there is currently no comprehensive system for reliable observer evaluation. This research involves the development of a new form along with a training package for use in research and possibly operational testing. The form consists of 24 rating scales. These scales focus on observable actions that trained air traffic control specialists could identify to make behaviorally based ratings. The study evaluates the reliability of the rating form by determining the consistency of ratings obtained from six observers who viewed videotapes of a previously recorded simulation study. These observers were supervisors and training staff specialists

from Terminal Radar Approach Control facilities nationwide. Prior to making formal ratings, the observers participated in a training program designed to help them become proficient in observational rating. During the evaluation phase of the study, the observers viewed 20 one hour videotapes of controllers working different traffic scenarios. The results indicated that most of the rating scales had reasonable inter-rater reliabilities ranging from $r=.7$ to $r=.9$. The study also identified the performance areas that were more difficult for observers to evaluate consistently, possibly due to misunderstanding rating criteria or overlooking critical controller actions.

AN (1) AD-A324 746/XAG

FG (2) 170900

250100

250200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Mode S Data Link Transponder Flight Test Results.

DN (9) Technical note

AU (10) Olson, Richard R.

RD (11) Feb 1997

PG (12) 19 Pages

RS (14) DOT/FAA/CT-TN96/30

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FLIGHT TESTING, *AIR TRAFFIC CONTROL SYSTEMS, *AIRPORT RADAR
SYSTEMS,

*DATA LINKS, *TRANSPONDERS

DELIVERY, DETECTION, ERRORS, DATA ACQUISITION, OVERLOAD

ID (25) AERONAUTICAL TELECOMMUNICATION NETWORK, MODE S(MODE SELECT),
VOICE

FREQUENCIES, RADAR SURVEILLANCE

AB (27) This report contains laboratory and flight test results of Mode Select (Mode S) transponder data collections. Data delivery, error detection, and performance information was obtained and verified.

AN (1) AD-A325 338/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) A Field Evaluation of Data Link Flight Information Services for General

Aviation Pilots.

DN (9) Final rept.
AU (10) Talotta, Nicholas J.
RD (11) Feb 1997
PG (12) 72 Pages
RS (14) DOT/FAA/CT-97/3
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *FIELD TESTS, *CIVIL AVIATION
TEST AND EVALUATION, WEATHER, PILOTS, SITES, DATA LINKS, AIR TRAFFIC
ID (25) AOPA/ASF(AIRCRAFT OWNER'S AND PILOTS ASSOCIATION AIR SAFETY
FOUNDATION), AIRCRAFT OWNER'S AND PILOTS ASSOCIATION AIR SAFETY
FOUNDATION, FLIGHT INFORMATION SERVICES, GENERAL AVIATION
AB (27) This report presents an analysis of results that were obtained from a
field evaluation of Data Link Flight Information Services designed for
use by general aviation pilots. The goal of the report is to provide an
independent assessment of the field evaluation based on an analysis of
the formal AOPA/ASF structured evaluation results and on direct
observations made during data collection site visits.

AN (1) AD-A325 954/XAG
FG (2) 170900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Fixed Ground Antenna Radome (FGAR) Type II Operational Test and
Evaluation (OT&E) Operational Test (Lihue Terminal Radar Facility).
DN (9) Final rept.
AU (10) Baker, Leonard
Sedgwick, Harold G.
RD (11) Feb 1997
PG (12) 94 Pages
RS (14) DOT/FAA/CT-TN97/1
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *RADOMES
OPERATIONAL EFFECTIVENESS, HUMAN FACTORS ENGINEERING,
ELECTROMAGNETIC
INTERFERENCE, ANTENNA RADIATION PATTERNS, AIRPORTS, HAWAII, RADAR
BEACONS
ID (25) ATCBI(AIR TRAFFIC CONTROL BEACON INTERROGATORS), FGAR(FIXED
GROUND
ANTENNA RADOMES), LIHUE MAIRPORT, KAUAI COUNTY(HAWAII)
AB (27) This report documents the Operational Test and Evaluation (OT&E)

operational testing performed on the Type II, Fixed Ground Antenna
Radome (FGAR) First Article installed at a terminal radar facility. The
Type II FGAR is used at: (1) Mode Select Beacon System (Mode S) and Air
Traffic Control Beacon Interrogator (ATCBI) beacon only sites (BOS),
and (2) selected terminal radar facilities which experience severe
environmental conditions. This testing was performed on the Federal
Aviation Administration's (FAA) Western-Pacific Region's Lihue Terminal
Radar Facility (LIH), Hawaii (HI) The testing was limited to
electromagnetic performance characteristics evaluation and human
engineering tests. Electromagnetic performance characteristics data
were collected by the Honolulu Combined Center/Radar Approach Control
(CERAP) ZHN. The testing showed the FGAR did not degrade the antenna
electromagnetic patterns. The human engineering test showed that the
FGAR Zenith Service Hatch Assembly mounted equipment can be maintained
by FAA environmental technicians. The testing determined that the FGAR
meets the Operational Suitability and Operational Effectiveness
requirements of the FAA.

AN (1) AD-A322 261/XAG
FG (2) 010600
050100
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) 1997 Federal Aviation Administration Plan for Research, Engineering, &
Development.
RD (11) Jan 1997
PG (12) 222 Pages
RN (18) XH-XD
RC (20) Unclassified report
NO (21) Report of the Federal Aviation Administration to the United States
Pursuant to 49 United States Code 44501(C).
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *CIVIL AVIATION
REQUIREMENTS, SYSTEMS ENGINEERING, UNITED STATES GOVERNMENT,
ENVIRONMENTS, CAPACITY(QUANTITY), MISSION PROFILES, SECURITY,
EFFICIENCY, VISION, RESEARCH MANAGEMENT, AVIATION SAFETY,
TECHNOLOGY
FORECASTING
ID (25) FAA(FEDERAL AVIATION ADMINISTRATION)
AB (27) The Federal Aviation Administration (FAA) Plan for research,
engineering and development (R,E&D) is published in response to
statutory requirements to provide an annual report to Congress on the
FAA's R,E&D program to ensure continued safety, security, capacity, and
efficiency of aviation in the United States. The research programs

selected for inclusion in the R, E&D program portfolio are those needed to bring the FAA's vision of the future system to reality in the context of a continuing top-level system engineering process. The FAA's R,E&D program has received contributions from across the spectrum of scientific, operational, and user communities. These contributions from both inside and outside government are always welcome, provide valuable inputs, and are greatly appreciated. bring the FAA's vision of the future system to reality in the context of a continuing top-level system engineering process. The FAA's R,E&D program has received contributions from across the spectrum of scientific, operational, and user communities. These contributions from both inside and outside government are always welcome, provide valuable inputs, and are greatly appreciated.

AN (1) AD-A322 331/XAG

FG (2) 010600

050200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 through 1996.

DN (9) Final rept.

AU (10) Collins, William E.

Wayda, Michael E.

RD (11) Jan 1997

PG (12) 81 Pages

RS (14) DOT/FAA/AM-97/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *INDEXES, *AVIATION MEDICINE

UNITED STATES GOVERNMENT, REPORTS, HISTORY, MEDICAL RESEARCH

ID (25) FEDERAL AVIATION ADMINISTRATION, CARI(CIVIL AEROMEDICAL RESEARCH INSTITUTE)

AB (27) An index to Federal Aviation Administration Office of Aviation Medicine

Reports (1964-1996) and Civil Aeromedical Institute Reports is presented for those engaged in aviation medicine and related activities. The index lists all FAA aviation medicine reports published from 1961 through 1996: chronologically (pp. 1-42), alphabetically by author (pp. 43-51), and alphabetically by subject (pp. 53-74). A foreword illustrates historical aspects of the Civil Aeromedical Institute's 35 years of service, describes the index's sections, and explains how to obtain copies of published Office of Aviation Medicine

technical reports.

AN (1) AD-A353 920/XAG

FG (2) 010500

010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Criminal Acts Against Civil Aviation.

RD (11) 1997

PG (12) 84 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *CRIMINOLOGY

GLOBAL, AIRPORTS, BOMBING, CRIMES, AIRCRAFT HIJACKING

AB (27) This document is a compilation of hijacking, bombing, and other significant criminal incidents against civil aviation interests worldwide.

AN (1) AD-A320 284/XAG

FG (2) 061000

170703

010500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) The Use of Task-Specific Lenses by Presbyopic Air Traffic Controllers at the En Route Radar Console.

DN (9) Final rept.

AU (10) Nakagawara, Van B.

Wood, Kathryn J.

RD (11) Dec 1996

PG (12) 23 Pages

RS (14) DOT/FAA/AM-96/27

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *CATHODE RAY TUBE SCREENS, *EYEGLASSES

STRESS(PHYSIOLOGY), HUMAN FACTORS ENGINEERING, AIRPORT RADAR SYSTEMS,

WORK STATIONS, VISUAL PERCEPTION, SENSES(PHYSIOLOGY),

TOLERANCES(PHYSIOLOGY), VISUAL AIDS, OPHTHALMOLOGY, FATIGUE(PHYSIOLOGY), ADAPTATION(PHYSIOLOGY), AIR TRAFFIC CONTROL TERMINAL AREAS

AB (27) The configuration of the radar console to control aircraft traffic has similar features to a visual display terminal (VDT) work station. Task-specific lenses have been found in clinical studies to reduce visual symptoms while working at the VDT. The American Optical Corporation TruVision Technica, a task-specific lens design, was evaluated to see if visual benefits from such a lens could be transferred from the VDT environment to the radar console work environment. Presbyopic Air Traffic Control Specialists (ATCSs) at the Houston Air Route Traffic Control Center were fitted with two prescription spectacles, using their current and Technica lens designs, in similar ophthalmic frames. Each ATCS used both lens designs at the radar console and provided subjective evaluations of their appropriateness in that environment. Thirteen (13) subjects (45.6 plus or minus 5.9 years of age, range 36-55 years) completed the study. Subjects who used larger near viewing area (single vision and executive) lens designs generally preferred their current lens design. The Technica was preferred by mature presbyopes (add power of greater than or equal to 1.25 diopters) and those using smaller near viewing area (FT-25, FT-28 and general progressive addition) lens designs. The primary complaints reported by ATCSs with the Technica were peripheral distortion and limited field of view. Task-specific lens designs are an alternative for presbyopic ATCS who work at a radar console. However, distortion and limited field of view from the lens may require prolonged adaptation times before such designs are acceptable to ATCS on the job, especially for those accustomed to lens designs with larger viewing areas.

AN (1) AD-A320 011/XAG

FG (2) 010300
201100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Engineering Approach to Damage Tolerance Analysis of Fuselage Skin Repairs.

DN (9) Final rept.

AU (10) Bakuckas, J. G., Jr.

Chen, C. C.

Yu, J.

Tan, P. W.

Bigelow, C. A.

RD (11) Nov 1996

PG (12) 29 Pages

RN (18) DOT/FAA/AR-95/75
XH-XD

RC (20) Unclassified report

NO (21) Prepared in collaboration with McDonnell Douglas Aerospace, Long Beach, CA.

DE (23) *DAMAGE ASSESSMENT, *FUSELAGES, *TOLERANCES(MECHANICS) STRESSES, COMPUTER PROGRAMS, SIMULATION, METHODOLOGY, INTEGRATED

SYSTEMS, MANUFACTURING, LAYERS, TWO DIMENSIONAL, FINITE ELEMENT ANALYSIS, STRUCTURES, INTENSITY, STRENGTH(MECHANICS), FRACTURE(MECHANICS), CODING, CRACK PROPAGATION, REPAIR, ENGINEERING,

SCHEDULING, RESIDUALS, CONFIGURATIONS, INSPECTION, RIVETS, USER NEEDS,

SIMPLIFICATION, SKIN(GENERAL), STRESS CONCENTRATION

AB (27) A simplified approach to damage tolerance analysis of riveted fuselage skin repairs has been incorporated in a new user-friendly software package, Repair Assessment Procedure and Integrated Design (RAPID). In this study, the damage tolerance analysis methodology in RAPID was evaluated in terms of the fastener loads, stress-intensity factor solutions, crack growth, residual strength, and inspection schedule. Three example problems, each representing a typical fuselage skin repair configuration, were analyzed. The analysis results obtained from RAPID were compared with results generated using a Representative Original Equipment Manufacturer (ROEM) method and a special purpose finite element program for fracture mechanics analysis and crack growth simulation in layered two dimensional structures. In general, results generated using RAPID were in good agreement with results generated using the ROEM method and the finite element code.

AN (1) AD-B222 497/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Report to Congress, Fourteenth Annual Report of Accomplishments under the Airport Improvement Program, Required by Section 47131 of Title 49 United States Code, FY 1995.

DN (9) Annual rept. no. 14.

RD (11) Nov 1996

PG (12) 154 Pages

RS (14) DOT/FAA/PP/96-4

RN (18) XH-XD

RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIRPORTS
INPUT, FUNCTIONS, CONGRESS, ORGANIZATIONS, DECISION MAKING,
MANAGEMENT,
FORMULATIONS, FACILITIES, TEAMS(PERSONNEL), GUIDANCE, PASSENGER
AIRCRAFT, PASSENGERS, FIELD CONDITIONS
DL (33) 12

AN (1) AD-A317 528/XAG

FG (2) 050900

170703

250400

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL**

INST

TI (6) An Analysis of Approach Control/Pilot Voice Communications.

DN (9) Final rept.

AU (10) Prinzo, O. V.

RD (11) Oct 1996

PG (12) 40 Pages

CT (15) DTFA02-91-C-91089

RN (18) DOT/FAA/AM-96/26

XH-XD

RC (20) Unclassified report

DE (23) *PILOTS, *SPEECH TRANSMISSION, *AIR TRAFFIC CONTROLLERS, *VOICE
COMMUNICATIONS

DATA BASES, FREQUENCY, DELIVERY, CONTROL SYSTEMS, AIR TRAFFIC
CONTROL

SYSTEMS, TIME, AERONAUTICS, ERROR ANALYSIS, ERRORS, AIRSPEED,
COMMUNICATION AND RADIO SYSTEMS, INSTRUCTIONS, MESSAGE

PROCESSING,

COLLISION AVOIDANCE, RADIOFREQUENCY, TAXONOMY, READING

ID (25) NMAC(NEAR MIDAIR COLLISIONS)

AB (27) This report consists of an analysis of air traffic control and pilot
voice communications that occurred at 3 terminal air traffic control
facilities (TRACONS). Each transmission was parsed into communication
elements. Each communication element was assigned to a speech act
category (e.g., address, instruction, request, advisory) and aviation
topic (e.g., heading, altitude, speed, readback) and evaluated using
the aviation topic-speech act taxonomy (ATSAT, Prinzo, et al., 1995). A
total of 12,200 communication elements in 4,500 transmissions make up
the database. Communication elements appeared most frequently in the

address and instruction speech act categories. Of the 2,500 controller
communication elements, 40% contained at least 1 communication error.
The number and types of communication errors (message content and
delivery technique) located within each speech act category were
determined and separate communication error analyses are reported for
pilots and controllers by TRACON facility. Of the 5,900 pilot
communication elements, 59% contained at least 1 communication error.
More than 50% of controllers and pilots communication errors occurred
in the instruction speech act category. Generally, controllers omitted
key words that pertained to radio frequency, airspeed, or
approach/departure instructions. Pilots only partially read back
instructions involving heading, radio frequency, and airspeed aviation
topics and grouped numbers in a radio frequency, airspeed, or heading.
Pilots and controllers communications became more conversational and
verbose when their transmissions included advisory or request speech
acts. Omitting and grouping numbers in transmissions may be strategies
used to minimize time on frequency. Ironically, these strategies may
create the problems that pilots and controllers are trying to prevent.

AN (1) AD-A315 037/XAG

FG (2) 010500

050900

120500

170800

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Test and Evaluation Plan of Computer-Based Training for the CTX 5000
Explosives Detection System.**

DN (9) Final rept.

AU (10) Cormier, S.

Fobes, J. L.

RD (11) Sep 1996

PG (12) 43 Pages

RS (14) AAR-510

RN (18) DOT/FAA/AR-96/67

XH-XD

RC (20) Unclassified report

DE (23) *JOB TRAINING, *COMPUTER AIDED INSTRUCTION, *AIRPORTS,
*EXPLOSIVES

DETECTION

AUTOMATION, RESOLUTION, FALSE ALARMS, IMAGES, COMPUTERIZED
TOMOGRAPHY,

DISCRIMINATE ANALYSIS, WARNING SYSTEMS

ID (25) SPEARS(SCREENER PROFICIENCY EVALUATION AND REPORTING SYSTEM)

AB (27) This Test and Evaluation Plan evaluates the effectiveness of computer-based training (CBT) as an element of a Screener Proficiency Evaluation and Reporting System (SPEARS) for checked baggage screening with the CTX 5000. The CTX 5000 combines computed tomography imaging and automated detection of explosives. Alarm resolution with this complex system requires that screeners learn to skillfully discriminate system false alarms from system-identified true threats. Testing is designed to determine the effectiveness of the CBT to meet the critical operational and technical issues described in this plan. The testing will be conducted at airports where the CTX 5000 system is currently located.

AN (1) AD-A315 191/XAG

FG (2) 170800

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test and Evaluation Plan for Threat Image Projection with the CTX 5000 Explosives Detection System.

DN (9) Final rept.

AU (10) Cormier, S.

Fobes, J. L.

RD (11) Sep 1996

PG (12) 75 Pages

RS (14) AAR-510

RN (18) DOT/FAA/AR-96/79

XH-XD

RC (20) Unclassified report

DE (23) *COMPUTERIZED TOMOGRAPHY, *EXPLOSIVES DETECTION IMAGE PROCESSING, THREAT EVALUATION, AREA SECURITY, AIRPORTS,

WARNING

SYSTEMS, IMAGE PROJECTORS, BAGS

ID (25) TIP(THREAT IMAGE PROJECTION), LUGGAGE SCREENING

AB (27) The effectiveness of Threat Image Projection (TIP) as an element of the Screener Proficiency Evaluation and Reporting System (SPEARS) for checked baggage screening with the CTX 5000 is evaluated. The CTX 5000 combines computed tomographic imaging and automated detection of explosives. This complex system requires that screeners learn to skillfully discriminate innocent bags that cause the system to alarm from genuine threats. Testing is designed to determine the effectiveness of TIP in meeting the critical operational issues described in this plan. Specifically, is TIP effective in improving and

maintaining screener performance in the detection of improvised explosive devices? Can the performance of individual screeners be monitored effectively with TIP? The testing will be conducted at airports where the CTX 5000 system is currently located.

AN (1) AD-A315 493/XAG

FG (2) 050800

050900

061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK AERONAUTICAL CENTER

TI (6) Shift Work, Age, and Performance: Investigation of the 2-2-1 Shift Schedule Used in Air Traffic Control Facilities II. Laboratory Performance Measures.

DN (9) Final rept.

AU (10) Rocco, Pam D.

Cruz, Crystal

RD (11) Sep 1996

PG (12) 60 Pages

RN (18) DOT/FAA/AM-96/23

XH-XD

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *AGING(PHYSIOLOGY), *PHYSIOLOGICAL EFFECTS,

*ROTATION, *AIR TRAFFIC CONTROLLERS

SIMULATION, PERFORMANCE TESTS, COGNITION, STRESS(PSYCHOLOGY), REASONING, ACCURACY, SCHEDULING, FATIGUE, JUDGEMENT(PSYCHOLOGY), PERCEPTION(PSYCHOLOGY), MEDICAL EXAMINATION, WORK MEASUREMENT, REACTION(PSYCHOLOGY), PSYCHOPHYSIOLOGY, MOTOR REACTIONS, RECALL

ID (25) *SHIFT WORK, ATCS(AIR TRAFFIC CONTROL SPECIALISTS), AIR TRAFFIC CONTROL

SPECIALISTS, MTPB(MULTIPLE TASK PERFORMANCE BATTERY), MULTIPLE TASK

PERFORMANCE BATTERY, 2-2-1 SHIFT SCHEDULE, AGE, AIR TRAFFIC CONTROL FACILITIES II, COUNTERCLOCKWISE ROTATIONS, PERFORMANCE DECREMENT,

CODE

LOCK TASK

AB (27) Many Air Traffic Control Specialists (ATCSs) work a counterclockwise rotating shift schedule, called the '2-2-1', or some variation of the schedule. The 2-2-1 involves rotating from two afternoon shifts to two mornings, and finally, to a midnight shift over the course of one work week. The purpose of the present study was to investigate the effects in two different age groups of working the 2-2-1 schedule, as compared

to a straight day schedule on measures of complex task performance in a laboratory-based synthetic work environment. It was hypothesized that the counterclockwise rotations would result in performance decrements over the course of the 2-2-1 week. Four groups of five male subjects between the ages of 30 to 35 (n=10) and 50 to 55 (n=10) participated in the four-week study. Subjects were screened on medical and cognitive criteria. The Multiple Task Performance Battery (MTPB) was utilized to provide a motivating synthetic work environment. Subjects worked three 2-hour sessions on the MTPB per eight-hour day for three weeks of a four-week protocol. During the second and fourth weeks, subjects worked day shifts (0800-1630). During the third week, subjects worked the 2-2-1 schedule. Performance measures were analyzed for each of the five tasks in the MTPB. Composite scores were also computed. Significant performance decrements were observed primarily on the night shift for both age groups. The older group demonstrated decrements in accuracy of recall on the code lock task following both rapid rotations during the 2-2-1 schedule. This study was part of a research program designed to develop fatigue countermeasures for Air Traffic Control Specialists. The hypothesis that the rapid, counterclockwise rotations would result in performance decrements was partially supported.

AN (1) AD-A316 691/XAG

FG (2) 010600

050100

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Flight Inspection Crew Resource Management Training Needs Analysis.

DN (9) Final rept.

AU (10) Bailey, Lawrence L.

Shaw, Rogers V.

RD (11) Sep 1996

PG (12) 17 Pages

RS (14) DOT/FAA/AM-96/24

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *REQUIREMENTS, *FLIGHT CREWS, *INSPECTION, *RESOURCE MANAGEMENT,

*MANAGEMENT TRAINING

UNITED STATES GOVERNMENT, SKILLS, PERFORMANCE(HUMAN), CLUSTERING,

SAFETY, AWARENESS, ACCIDENT INVESTIGATIONS

ID (25) NTSB(NATIONAL TRANSPORTATION SAFETY BOARD), CRM(CREW RESOURCE MANAGEMENT)

AB (27) On October 26, 1993, there was a fatal crash of a Federal Aviation Administration (FAA) flight inspection aircraft. During the accident investigation, the National Transportation Safety Board (NTSB) cited ineffective crew resource management (CRM) as one of the causal factors and recommended CRM training for flight inspection aircrews. As part of the FAA's response to the NTSB recommendation, a CRM training needs analysis was conducted. Cluster analytic results of the identified training needs suggested three categories affecting crew performance: (1) technical skills, (2) crew coordination skills, and (3) the organization context in which flight inspection crews perform. Implications for CRM awareness training are discussed. The purpose of this report is to document the flight inspection CRM training needs that emerged from the analyses and to recommend steps for developing a flight inspection CRM training program.

AN (1) AD-A318 104/XAG

FG (2) 010400

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Flight Inspection Crew Resource Management Training Needs Analysis.

DN (9) Final rept.

AU (10) Bailey, Lawrence L.

Shaw, Rogers V.

RD (11) Sep 1996

PG (12) 17 Pages

RS (14) DOT/FAA/AM-96/24

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FLIGHT CREWS, *RESOURCE MANAGEMENT, *AVIATION SAFETY REQUIREMENTS, TRANSPORTATION, AIRCRAFT, SKILLS, FLIGHT TRAINING, PERFORMANCE(HUMAN), INSPECTION, AWARENESS, ACCIDENT INVESTIGATIONS

ID (25) CRM(CREW RESOURCE MANAGEMENT)

AB (27) On October 26, 1993, there was a fatal crash of a Federal Aviation Administration (FAA) flight inspection aircraft. During the accident investigation, the National Transportation Safety Board (NTSB) cited ineffective crew resource management (CRM) as one of the causal factors and recommended CRM training for flight inspection aircrews. As part of

the FAA's response to the NTSB recommendation, a CRM training needs analysis was conducted. Cluster analytic results of the identified training needs suggested three categories affecting crew performance: (1) technical skills, (2) crew coordination skills, and (3) the organization context in which flight inspection crews perform. Implications for CRM awareness training are discussed. The purpose of this report is to document the flight inspection CRM training needs that emerged from the analyses and to recommend steps for developing a flight inspection CRM training program.

AN (1) AD-A318 108/XAG

**FG (2) 010301
131200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
RESEARCH**

TI (6) Halon Replacement Options for Use in Aircraft Fire Suppression Systems.

DN (9) Final rept.

AU (10) Tapscott, Robert

RD (11) Sep 1996

PG (12) 65 Pages

RS (14) DOT/FAA/AR-96/90

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT FIRES, *FIRE SUPPRESSION, *FIRE EXTINGUISHING AGENTS
TEST AND EVALUATION, AIRCRAFT, POLYMERS, REPLACEMENT, FLUORINATED
HYDROCARBONS

ID (25) *HALON

AB (27) This report contains a summary of available fire suppression agents, their properties, and applicability in the various aircraft applications. Classes of agents, with presently available agents listed, are recommended for use in the development of test protocols. The test protocol developed for a class of agents can be used, with minor modifications, to test all agents belonging to that class.

AN (1) AD-A319 234/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Evaluation of Dual Simultaneous Instrument Landing System Approaches to
Runways Spaced 3000 Feet Apart with One Localizer Offset Using a
Precision Runway Monitor System.**

DN (9) Final rept.

AU (10) Ozmore, Richard E.
Morrow, Sherri L.

RD (11) Sep 1996

PG (12) 159 Pages

RS (14) DOT/FAA/CT-96/2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *MONITORS, *RUNWAYS, *INSTRUMENT LANDINGS
TEST AND EVALUATION, OBSERVERS, SIMULATION, AIRCRAFT, TRAINING,
MONITORING, REAL TIME, PILOTS, RADAR, CONFIGURATIONS, PRECISION,
SAFETY, LEVEL(QUANTITY), PARALLEL ORIENTATION, WORKLOAD
ID (25) *SIMULTANEOUS LANDINGS, PRM(PRECISION RUNWAY MONITOR),
FMA(FINAL
MONITOR AID), MPAP(MULTIPLE PARALLEL APPROACH PROGRAM), NTZ(NO
TRANSGRESSION ZONE), BBO(NUISANCE BREAKOUTS)

AB (27) A real time simulation was conducted to evaluate simultaneous ILS approaches to two runways spaced 3000 ft apart with one localizer offset by 2.5 degrees. Air traffic controllers monitored traffic using a simulated Precision Runway Monitor (PRM) system which consisted of Final Monitor Aid (FMA) displays and a simulated radar update rate of 1.0 second. Aircraft blunders were introduced to test the air traffic control system ability to maintain adequate separation between aircraft on final approaches during critical situations using the proposed runway configuration. Four criteria were developed by the Multiple Parallel Approach Program (MPAP) Technical Work Group to evaluate the study: (1) the number of Test Criterion Violations (TCVs) relative to the total number of at-risk, non-responding blunders, and relative to a predetermined target level of safety of no more than one fatal accident per 25,000,000 approaches; (2) the frequency of No Transgression Zone (NTZ) entries and nuisance breakouts (NBOs); (3) an evaluation of controller communications workload; and (4) an operational assessment from MPAP TWG members and participating controller and pilot technical observers. The results of the simulation passed all of the test criteria. The MPAP TWG recommended the 3000-ft dual offset procedure for approval in the operational environment, given similar controller and pilot training, when the PRM system is used.

AN (1) AD-A313 864/XAG

**FG (2) 010600
050600
060400**

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Fatal General Aviation Accidents Involving Spatial Disorientation:
1976-1992.

DN (9) Final rept.

AU (10) Collins, William E.
Dollar, Carolyn S.

RD (11) Aug 1996

PG (12) 15 Pages

RS (14) DOT/FAA/AM-96/21

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *SPATIAL DISTRIBUTION, *HISTORY, *AVIATION ACCIDENTS, *MORTALITY
RATE,

*PHYSIOLOGICAL DISORIENTATION

DECISION MAKING, WEATHER, FLIGHT TRAINING, COMPUTERS, PILOTS,
DEMOGRAPHY, AGING(PHYSIOLOGY), INFORMATION RETRIEVAL, ADVERSE
CONDITIONS, DAY, TABLES(DATA), NIGHT, BEHAVIOR, AVIATION SAFETY,

WORK

MEASUREMENT, GENERAL AVIATION AIRCRAFT

ID (25) NTSB(NATIONAL TRANSPORTATION SAFETY BOARD)

AB (27) The National Transportation Safety Board (NTSB) analyzes circumstances
and data from general aviation accidents and ascribes one or more
causes and/or related factors to help explain each accident. The
present study was undertaken to (a) provide information regarding the
circumstances surrounding fatal general aviation accidents involving
spatial disorientation, and (b) define demographic and behavioral
characteristics of the spatially- disoriented pilot. Computer
retrievals of NTSB brief reports of all spatial disorientation
accidents from 1976-92 were analyzed in terms of age and experience of
pilots, actions of pilots, night or day, weather, and other conditions.
The computer search yielded 1,022 reports of spatial disorientation
accidents, which for the 17-year period, resulted in 2,355 fatalities.
Related causes and circumstances associated with the accidents were
analyzed and categorized. The frequency of spatial disorientation
accidents during 1976-92 peaked at 97 fatal accidents in 1977 and
generally declined thereafter. The proportion of involved pilots who
held an instrument rating about doubled when comparing 1976-83 to
1984-92, over 70% of the accidents were associated with instrument
meteorological conditions, and about half of the accidents occurred at
night. The proportion of fatal general aviation accidents associated
with spatial disorientation has declined significantly since an earlier
study (1970-75).

AN (1) AD-A314 600/XAG

FG (2) 010500
060400

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) A Further Validation of the Practical Color Vision Test for En Route
Air Traffic Control Applicants

DN (9) Final rept.

AU (10) Mertens, H. W.
Milburn, N. J.
Collins, W. E.

RD (11) Aug 1996

PG (12) 12 Pages

RN (18) DOT/FAA/AM-96-22
XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *VISUAL ACUITY, *COLOR VISION
TEST AND EVALUATION, JOBS, JOB TRAINING, PREDICTIONS, VALIDATION,
SECONDARY, TEST METHODS, RADAR, COLORS, ERRORS, DEFICIENCIES,
SELECTION, SCORING, ABNORMALITIES, COLOR CODING

AB (27) The Flight Progress Strips Test (FPST) is currently used for secondary
color vision screening of applicants for air traffic control jobs at en
route centers. The test provides a practical, job-specific color vision
selection criterion involving use of color coding in the most important
color task of en route radar controllers, i.e., discrimination of the
non-redundant color coding in flight progress strips (FPSs). This
experiment provides a further, independent validation of the FPST using
a new criterion test. Prediction by the FPST of performance on the new
and old criterion tests was compared. Subjects were classified as
normal or deficient based on anomaloscope readings. The pass/fail
cutoff score for all tests was 'pass with no more than one error.' All
people with normal color vision passed. Over all, for participants with
both normal and abnormal color vision, the correlations between error
scores on the FPST and both criterion tests were greater than $r=.93$,
and error scores tended to increase with degree of color vision
deficiency. The validity of the FPST was $Kappa=.86$ for prediction of
performance on the new criterion test, as compared to $.91$ for
prediction of performance on the original criterion test. Part of that
small decrease in validity may be because of application of the same
pass/fail cutoff score to the new criterion test, which contains a
larger number of items than the FPST. The predictive validity of the

FPST was shown to be acceptably high in this further validation with a new, independent set of actual flight progress strips as the criterion test.

AN (1) AD-A315 992/XAG

FG (2) 010500

130100

200600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Dual-Colored Declared Distance Lighting Fixture Evaluation.

DN (9) Technical note

AU (10) Bagot, Keith W.

RD (11) Aug 1996

PG (12) 55 Pages

RS (14) DOT/FAA/AR-TN96/24

CT (15) DTFA03-95-D-00019

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Original contains color plates: All DTIC and NTIS reproductions will be in black and white.

DE (23) *COLORS, *LIGHTING EQUIPMENT, *RUNWAYS

TEST AND EVALUATION, ROLL, MARYLAND, POLICIES, EDGES, PILOTS, RED(COLOR), NEW YORK, OPERATIONAL EFFECTIVENESS, REGIONS,

LIMITATIONS,

CONFIGURATIONS, TAKEOFF, STANDARDS, GUIDANCE, PERSONNEL,

MANEUVERS,

VISUAL PERCEPTION, RANGE(DISTANCE), BLUE(COLOR), AIRPORTS, QUESTIONNAIRES, TEST FACILITIES, NEW JERSEY, GREAT LAKES, MUNICIPALITIES

AB (27) Several dual-color (red/blue) runway edge lighting configurations used to define the pre-threshold and post-runway end segments of declared distance runways were evaluated at four different airports. At three airports, Binghamton Regional Airport (BGM), New York, Baltimore-Washington International Airport (BWI), Maryland, and Atlantic City International Airport (ACY), New Jersey, the lighting configurations were in accordance with the Federal Aviation Administration (FAA) Great Lakes Region policy and procedures memorandum entitled "Guidance on Declared Distance Standards." An additional test installation at the Millville Municipal Airport (MIV), New Jersey, permitted the evaluation of different color configurations to designate areas restricted to taxi only; takeoff, but no landing;

and rollout only maneuvers. FAA test pilots and visual guidance project personnel (also pilots) conducted flight and ground taxi testing using B-727 and Convair 580 type aircraft to evaluate each color configuration for its suitability in best depicting the operational limitations for each runway segment. The tests were also intended to determine the most appropriate location for red color runway end lights and the suitability of available dual-color edge lights components for this use. Evaluators were briefed prior to each test session and completed postflight questionnaires. This report describes the conduct of the evaluation and provides detailed results, conclusions, and recommendations.

AN (1) AD-A315 998/XAG

FG (2) 010300

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) User Preferred Fire Extinguishing Agents for Engine and Auxiliary Power Unit (APU) Compartments.

DN (9) Final rept.

AU (10) Mehta, Harendra K.

Benedictus, Jelle

Blackburn, John

Dunker, Bernd

Grabow, Thomas

RD (11) Aug 1996

PG (12) 15 Pages

RS (14) DOT/FAA/AR-96/80

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT FIRES, *FIRE EXTINGUISHING AGENTS

AUXILIARY, MANUFACTURING, AIRCRAFT ENGINES, COMMERCIAL AVIATION, AIRFRAMES, USER NEEDS, POWER EQUIPMENT

ID (25) *HALON REPLACEMENT AGENTS, APU(AUXILIARY POWER UNITS)

AB (27) The results of the 'User Preferred Agent for Engine and Auxiliary Power Unit (APU) Compartment Fire Extinguishing System' survey sent to airlines and airframe manufacturers are compiled in this report.

AN (1) AD-B220 074/XAG

FG (2) 010305

131200

190900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Transport Aircraft Survivability Program: Full Scale Test Series
Aircraft Response Test V (ART-V) Report. Volume III: Data Analysis.

DN (9) Final rept. 1 Jun 94-15 Jan 95

AU (10) Clough, Bruce T.

RD (11) Aug 1996

PG (12) 311 Pages

PJ (16) FAAF

TN (17) 91

RN (18) WL*-TR-96-3135

XC-WL*

RC (20) Unclassified report

NO (21) Original contains color plates: All DTIC reproductions will be in black and white.

AL (22) Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; May 95. Other requests shall be referred to Assistant Administrator for Civilian Aviation Security, ACS-20 Scientific Advisor, Federal Aviation Administration, 800 Independence Ave., SW, Washington, DC 20591., This document contains export-controlled technical data.

DE (23) *TEST AND EVALUATION, *SURVIVABILITY, *EXPLOSIONS, *TRANSPORT AIRCRAFT

DATA PROCESSING, COMMERCIAL AIRCRAFT, DYNAMIC RESPONSE, SECURITY, VULNERABILITY, EXPLOSIVES, INTERNAL, HARDENING, NAVAL AIR STATIONS, BAGS

ID (25) EXPORT CONTROL, PE62201F, WUWLFAAF9101

AB (27) This is the third volume in the report detailing the planning, execution, and results of the Aircraft Response Test Series V, accomplished Nov - Dec 1995 at Patuxent River Naval Air Station. The effort was funded by the FAA Aviation Security Office, with USAF Wright Laboratory as technical lead. During the test series, a number of shots were accomplished using explosives in luggage to gauge the vulnerability of transport aircraft systems and structure. The results will be used to reduce aircraft vulnerability from internal explosions. This volume contains a review of each individual shot, then develops overall results which lead to the conclusions and recommendations.

DL (33) 02

57

AN (1) AD-A311 720/XAG

FG (2) 130200

010500

070200

110200

201100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Follow-On Friction Testing of Retro-Reflective Glass Beads.

AU (10) Bagot, Keith

RD (11) Jul 1996

PG (12) 9 Pages

RS (14) DOT/FAA/AR-TN96/74

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RETROREFLECTORS, *GLASS, *SURFACES, *MARKERS, *FRICTION, *BEADS TEST AND EVALUATION, SIZES(DIMENSIONS), SILICON DIOXIDE, PAVEMENTS, SAND, PAINTS, AIRPORTS

ID (25) RETROREFLECTIVE BEADS

AB (27) In 1993 and 1994 the FAA Technical Center conducted an evaluation of retroreflective beads in airport pavement markings. That study proved that the addition of glass beads greatly enhanced the conspicuity of the surface markings. In the study the beaded stripes had a silica (sand) friction enhancement added to the paint. A concern arose as to the friction characteristics of beaded paint without silica. The current study was conducted to test the friction levels of painted surface markings with and without beads and/or silica. Results of this study indicate that the friction levels of surface painted markings can be increased by adding retro-reflective glass beads to the paint. Silica also increased the friction of the surface markings; however, when glass beads were also added, the benefit of silica was reduced due to its smaller size in relation to the size of the beads. p3

AN (1) AD-A312 189/XAG

FG (2) 170703

010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Time Code Display (TCD): Operational Test and Evaluation (OT&E) Integration and Operational Test Plan.

DN (9) Technical note

AU (10) Melillo, Michael R.

RD (11) Jul 1996

PG (12) 37 Pages
RS (14) DOT/FAA/CT-TN95/67
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *LIGHT EMITTING DIODES
TEST AND EVALUATION, SIGNAL PROCESSING, CLOCKS, ACCURACY,
COMPATIBILITY, OPERATIONAL EFFECTIVENESS, TIME, CIVIL AVIATION,
SYSTEMS

ANALYSIS, DATA DISPLAYS

ID (25) TIMECODE READERS

AB (27) This technical note contains the Time Code Display (TCD) Operational
Test and Evaluation (OT&E) Integration and Operational Test Plan. This
test plan was used to define the overall planning, coordination, and
testing associated with the preparation and conduct of the OT&E effort
for the TCD project. In addition, this plan was utilized to serve as a
basis for the development of the OT&E Test Procedures.

AN (1) AD-A313 468/XAG

**FG (2) 070400
070600**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

OFFICE OF A VIATION RESEARCH

TI (6) An Integral Method of Nonisothermal Kinetic Analysis.

DN (9) Final rept.

AU (10) Lyon, Richard E.

RD (11) Jul 1996

PG (12) 21 Pages

RS (14) AAR-423

RN (18) DOT/FAA/AR-96/68
XH-XD

RC (20) Unclassified report

DE (23) *REACTION KINETICS, *POLYETHYLENE, *DIFFERENTIAL THERMAL
ANALYSIS

QUANTITATIVE ANALYSIS, ACCURACY, TEMPERATURE GRADIENTS,
APPROXIMATION(MATHEMATICS), INTEGRAL EQUATIONS,
CONCENTRATION(CHEMISTRY), PYROLYSIS, OLIGOMERS, ACTIVATION

ENERGY,

POLYIMIDE RESINS, ARRHENIUS EQUATION, THERMOGRAVIMETRIC ANALYSIS,

HEAT

OF REACTION

ID (25) PHENYLETHYLNYL

AB (27) A quantitative semianalytic solution for the constant heating rate

Arrhenius integral forms the basis of a new isoconversion method for
determining both the activation energy and frequency factor of an
arbitrary, single-step reaction from temperature scanning experiments
independent of the form of the rate law. Advantages of the new integral
method compared to existing techniques include simplicity, better
accuracy, and broad applicability.

AN (1) AD-A314 320/XAG

FG (2) 130600

150500

130800

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

RESEARCH

TI (6) User Preferred Fire Extinguishing Agent for Cargo Compartments.

DN (9) Final rept.

AU (10) Gupta, Alankar

RD (11) Jul 1996

PG (12) 45 Pages

RS (14) DOT/FAA/AR-96/30

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMPARTMENTS, *CARGO, *FIRE EXTINGUISHING AGENTS

MANUFACTURING, COMMERCIAL AVIATION, SURVEYS, AIRFRAMES, USER
NEEDS,

FIRE SUPPRESSION

AB (27) The results of the survey sent to airlines and airframe manufacturers
on User Preferred Fire Extinguishing Agent for Cargo Compartments are
compiled in this report.

AN (1) AD-A314 324/XAG

FG (2) 010500

130100

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) New Generation Runway Visual Range (RVR) Category IIIb Evaluation
Report.**

DN (9) Technical note

AU (10) Benner, William

Carty, Thomas

Jones, Michael

RD (11) Jul 1996

PG (12) 19 Pages
RS (14) DOT/FAA/CT-TN95/43
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *VISIBILITY, *RANGE(DISTANCE), *RUNWAYS
OBSERVERS, CLOUDS, MEASUREMENT, ACCURACY, TARGETS, FOG, HIGH
DENSITY,
STATISTICAL ANALYSIS, NIGHT FLIGHT, MARKER LIGHTS, BLACK(COLOR),
LANDING LIGHTS
ID (25) RVR(RUNWAY VISUAL RANGE)
AB (27) This document provides results of the Category IIIb Evaluation of the
New Generation Runway Visual Range (RVR) system. The evaluation was
conducted from September 29 to October 8, 1994, at Mt Washington, NH.
The primary purpose of the evaluation was to obtain data indicating RVR
performance during actual Category IIIb visibility conditions. The
evaluation consisted of comparing RVR system measurements with those of
human observers viewing runway lights in dense clouds and fog. Observer
and RVR measurements were obtained simultaneously and recorded for
statistical analysis. Approximately 500 observations were made during
the evaluation under day and night conditions. In addition to using
runway lights, 'black targets'--dark colored objects, were used in
observations and compared with RVR measurements. The black targets were
used during light conditions where they would be more visible than
runway lights. Results indicated that RVR accuracy was generally within
100 feet or one reporting unit of the observed visibility.

AN (1) AD-A315 192/XAG
FG (2) 170703
010500
131200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) 1030/1090 Megahertz Signal Analysis Frankfurt, Germany.
DN (9) Technical note
AU (10) Wapelhorst, Leo
Pagano, Thomas
RD (11) Jul 1996
PG (12) 48 Pages
RS (14) DOT/FAA/CT-TN96/20
RN (18) XH-XD
RC (20) Unclassified report
AL (22) Availability: Document partially illegible.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COLLISION AVOIDANCE

OPERATIONAL READINESS, FREQUENCY BANDS, GERMANY, AVIATION SAFETY,
AIR
TRAFFIC, ULTRAHIGH FREQUENCY, RADAR BEACONS
ID (25) ATCRBS(AIR TRAFFIC CONTROL RADAR BEACON SYSTEMS), TCAS(TRAFFIC
ALERT
AND COLLISION AVOIDANCE SYSTEMS), FRANKFURT(GERMANY)
AB (27) The Data Link Test Analysis System (DATAS) was used in the Frankfurt,
Germany area to collect data in the frequency band used by Air Traffic
Control Radar Beacon System (ATCRBS) and Traffic Alert and Collision
Avoidance System (TCAS). Data were collected and analyzed for both
frequencies in order to assess the compatibility of these users of this
frequency band.
23

AN (1) AD-A315 943/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) New Generation Runway Visual Range (RVR) Final Operational Test and
Evaluation Report. Volume 3.
DN (9) Technical note, Mar 92-Jun 94
AU (10) Benner, William
Carty, Thomas
Jones, Michael
RD (11) Jul 1996
PG (12) 271 Pages
RS (14) DOT/FAA/CT-TN95/32-VOL-3
RN (18) XH-XD
RC (20) Unclassified report
NO (21) Performed in cooperation with Raytheon Service Company, Pleasantville,
NJ. ADA315944
AL (22) Availability: Document partially illegible.
DE (23) *VISIBILITY, *RANGE(DISTANCE), *RUNWAYS
TEST AND EVALUATION, REQUIREMENTS, CLOUDS, MEASUREMENT,
OPERATIONAL
EFFECTIVENESS, PRESSURE MEASUREMENT, SNOW, FOG, AIR SPACE, HIGH
DENSITY, ACOUSTIC MEASUREMENT, STATISTICAL ANALYSIS, INERTIAL
MEASUREMENT UNITS, NIGHT FLIGHT, MARKER LIGHTS, ELECTRICAL
MEASUREMENT,
CORRECTIONS, LANDING LIGHTS, POWER MEASUREMENT, SNOW REMOVAL
ID (25) RVR(RUNWAY VISUAL RANGE)
AB (27) This report summarizes Operational Test and Evaluation (OT&E)
activities for the New Generation Runway Visual Range (RVR) system.

Testing consisted of an initial OT&R seven individual retests and several specialized tests. DOT/FAA/CT-Th92/37 provides results of the initial OT&E conducted in March 1992. This document summarizes results of seven retests as well as specialized tests conducted from August 1992 through June 1994. The purpose and intent of OT&E was to verify RVR National Airspace Requirements (NAS) and to verify the operational effectiveness and suitability of the RVR within the NAS environment. At the completion of the retest and specialized test efforts results indicated that the most significant sensor and system problems had been resolved via permanent design changes as well as interim 'work-arounds.' It was recommended that the RVR system be deployed nationally under the following conditions: (a) Additional data be obtained indicating RVR performance during Category IIb visibility; and (b) Problems currently having interim work-around solutions be resolved with permanent corrections. This volume contains appendices H through K referenced in Volume L.

23

AN (1) AD-A315 944/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) New Generation Runway Visual Range (RVR) Final Operational Test and Evaluation Report. Volume 2.

DN (9) Technical note, Mar 92-Jun 94

AU (10) Benner, William

Carty, Thomas

Jones, Michael

RD (11) Jul 1996

PG (12) 211 Pages

RS (14) DOT/FAA/CT-TN95/32-VOL-2

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Performed in cooperation with Raytheon Service Co., Pleasantville, NJ.

ADA315943

AL (22) Availability: Document partially illegible.

DE (23) *VISIBILITY, *RANGE(DISTANCE), *RUNWAYS

TEST AND EVALUATION, REQUIREMENTS, CLOUDS, MEASUREMENT, OPERATIONAL

EFFECTIVENESS, SNOW, FOG, AIR SPACE, HIGH DENSITY, ACOUSTIC

MEASUREMENT, STATISTICAL ANALYSIS, INERTIAL MEASUREMENT UNITS,

NIGHT

FLIGHT, MARKER LIGHTS, ELECTRICAL MEASUREMENT, CORRECTIONS, LANDING

LIGHTS, SNOW REMOVAL

ID (25) RVR(RUNWAY VISUAL RANGE)

AB (27) This report summarizes Operational Test and Evaluation (OT&E) activities for the New Generation Runway Visual Range (RVR) system.

Testing consisted of an initial OT&E, seven individual retests and several specialized tests. DOT/FAA/CT-TN92/37 provides results of the initial OT&E conducted in March 1992. This document summarizes results

of seven retests as well as specialized tests conducted from August 1992 through June 1994. The purpose and intent of OT&E was to verify RVR National Airspace Requirements (NAS) and to verify the operational

effectiveness and suitability of the RVR within the NAS environment. At the completion of the retest and specialized test efforts results

indicated that the most significant sensor and system problems had been resolved via permanent design changes as well as interim

'work-arounds.' It was recommended that the RVR system be deployed nationally under the following conditions: (a) Additional data be

obtained indicating RVR performance during Category IIIb visibility;

and (b) Problems currently having interim work-around solutions be resolved with permanent corrections. This volume contains appendices A

through G referenced in Volume I.

23

AN (1) AD-A315 996/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) New Generation Runway Visual Range (RVR) Final Operational Test and Evaluation Report: Volume I.

DN (9) Technical note Mar 92-Jun 94

AU (10) Benner, William

Carty, Thomas

RD (11) Jul 1996

PG (12) 63 Pages

RS (14) DOT/FAA/CT-TN95/32-VOL-1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR SPACE, *VISIBILITY, *RUNWAYS, *NAVIGATIONAL AIDS

TEST AND EVALUATION, OPERATIONAL EFFECTIVENESS, CORRECTIONS

ID (25) RVR(RUNWAY VISUAL RANGE), NAS(NATIONAL AIR SPACE), TERMINAL NAVIGATION

AB (27) This report summarizes Operational Test and Evaluation (OT&E) activities for the New Generation Runway Visual Range (RVR) system. Testing consisted of an initial OT&E, seven individual retests and several specialized test DOT/FAA/CT-TN92/37 provides results of the initial OT&E conducted in March 1992. This document summarizes results of seven retests as well as specialized tests conducted from August 1992 through June 1994. The purpose and intent of OT&E was to verify RVR National Airspace Requirements (NAS) and to verify the operational effectiveness and suitability of the RVR within the NAS environment. At the completion of the retest and specialized test efforts results indicated that the most significant sensor and system problems had been resolved via permanent design changes as well as interim 'work-arounds'. It was recommended that the RVR system be deployed nationally under the following conditions: (a) Additional data be obtained indicating RVR performance during Category IIIb visibility; and (b) Problems currently having interim work-around solutions be resolved with permanent corrections. This volume contains a summary of the retest and specialized tests performed during the aforementioned period.

AN (1) AD-A310 474/XAG

FG (2) 040200

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Weather and Radar Processor (WARP) Operational Capabilities Test (OCT) procedures.

DN (9) Technical note

AU (10) Benner, William

Malitsky, Christopher

Nguyen, Tri

RD (11) Jun 1996

PG (12) 97 Pages

RS (14) DOT/FAA/CT-TN95/51

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *WEATHER, *RADAR

TEST AND EVALUATION, STRATEGY, PROCESSING EQUIPMENT, OPERATIONAL EFFECTIVENESS, ARTIFICIAL SATELLITES

AB (27) The WARP OCT Procedures identify the test steps which will be used to determine if a vendor's proposed system will meet WARP Stage 0 requirements. The procedures also contain an overview of the OCT test strategy, requirements, conduct, and evaluation.

AN (1) AD-A311 257/XAG

FG (2) 010300

230600

240500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK AERONAUTICAL CENTER

TI (6) Aircraft Evacuations Onto Escape Slides and Platforms I: Effects of Passenger Motivation.

AU (10) McLean, G. A.

George, M. H.

Funkhouser, G. E.

Chittum, C. B.

RD (11) Jun 1996

PG (12) 18 Pages

RN (18) DOT/FAA/AM-96/18

XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *EMERGENCIES, *TRANSPORT AIRCRAFT, *ESCAPE SYSTEMS, *PASSENGERS,

*EVACUATION, *AIRCRAFT CABINS

TEST AND EVALUATION, COMPETITION, AIRCRAFT, AIR, TEST METHODS, TIME, SMOKE, ROUTING, BEHAVIOR, MOTIVATION, AIR QUALITY, RIGIDITY, EXITS, RAMPS

ID (25) ESCAPE SLIDES, B-737 AIRCRAFT

AB (27) Experimental evaluations of passenger egress during simulated emergency evacuations have provided different results, depending on such variables as subject motivation level and escape route utilized in the particular study. The study reported here was conducted to compare competitive versus cooperative subject behavior within a single study using inflatable escape slides versus door sill-height platforms connected to rigid ramps as the escape routes. Four groups of subjects, ranging in age from 18 to 44, were employed in a 2 (motivation level) x 2 (egress route) x 2 (air quality) repeated-measures design. Motivation level was the between-groups factor; evacuation route and air quality (clear air versus smoke) were within-groups factors. Main effects on total egress time were found for motivation level ($p < .008$) and egress route ($p < .012$), as competitive behavior and platforms-with-ramps produced much faster evacuation times. Air quality effects on total egress times failed to achieve statistical significance; however, the combination of air quality with the other variables produced substantial interactions. These results indicate that findings derived

from evacuation studies are very susceptible to nuances in individual subject behavior and experimental techniques/protocol. Combining previously studied independent variables may produce unexpected interactions that invalidate initial assumptions about the utility of those variables in answering specific research questions. Studies intended to assess the evacuation potential of aircraft designs, configurations, and operating procedures should tightly control such variables to prevent them from inadvertently confounding the experimental questions being addressed.

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AN (1) AD-A311 563/XAG

FG (2) 010309

130400

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Evaluation of Large Class B Cargo Compartment's Fire Protection.

DN (9) Final rept.

AU (10) Blake, David

RD (11) Jun 1996

PG (12) 37 Pages

RS (14) DOT/FAA/AR-96/5

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *SMOKE, *AVIATION SAFETY, *FIRE CONTROL SYSTEMS, *FIRE SAFETY REQUIREMENTS, CARGO VEHICLES, CARGO, TRANSPORT AIRCRAFT, FIRE SUPPRESSION, FIRE RESISTANCE, FIRE EXTINGUISHERS

ID (25) FIRE CONTAINMENT COVERS, FIRE RESISTANT CONTAINERS, TOTAL FLOOD EXTINGUISHING SYSTEM, DC-10 AIRCRAFT, B-707 AIRCRAFT, SMOKE

DETECTION

AB (27) Twenty-six tests were conducted to evaluate the effectiveness of current fire safety requirements for large Class B cargo compartments as well as proposed improvements to the requirements. The major findings were that the current requirements are not effective on the types of fires tested and that there are several alternatives that could be implemented to better enable a large Class B compartment to withstand the types of fires tested.

AN (1) AD-A311 624/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) ARSR-4 OT&E Test Plan for the EARTS and MicroEARTS.

DN (9) Technical note

AU (10) McDonald, Raymond K.

RD (11) Jun 1996

PG (12) 42 Pages

RS (14) DOT/FAA/CT-TN96/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RADAR TRACKING

TEST AND EVALUATION, UNITED STATES, COASTAL REGIONS, AUTOMATION, WEATHER, DATA MANAGEMENT, VERIFICATION, PERFORMANCE TESTS, STATE OF THE

ART, PROCESSING, RADAR, AIR TRAFFIC CONTROL SYSTEMS, OPERATIONAL EFFECTIVENESS, INTEGRATION, LONG RANGE(DISTANCE), FORMATS, CUBA, DELAY,

SYSTEMS ANALYSIS, QUESTIONNAIRES, SEARCH RADAR, HAWAII, AUTOMATIC TRACKING, GUAM

AB (27) The Air Route Surveillance Radar Model 4 (ARSR-4) is a state-of-the-art, three-dimensional, long-range unattended radar. The system is being jointly procured by the Federal Aviation Administration (FAA) and the U.S. Military. This radar will replace aging height-finding and long-range two-dimensional air search radars which are currently in use. Forty-four ARSR-4 systems are scheduled for installation around the coastal United States and in Hawaii, Guam, and Guantanamo Bay, Cuba. This document defines the overall planning, test activities, and coordination associated with the Operational Test and Evaluation (OT&E) of the ARSR-4/En Route Automated Radar Tracking System (EARTS) and ARSR-4/Microprocessor En Route Automated Radar Tracking System (MicroEARTS) interfaces. The tests will be performed at the FAA Technical Center, the Mt. Santa Rosa and Mt. Kaala ARSR-4 facilities, and the Guam and Honolulu Center Enroute Radar Approaches (CERAPs). The tests are divided into two major categories: Integration tests and Operational tests. Integration tests include data format verification, capacity and delay tests, and a system performance evaluation. During Operational tests, Air Traffic Control (ATC) personnel will evaluate the effectiveness and suitability of the ARSR-4 when operated with an EARTS or MicroEARTS. Operational questionnaires will address critical performance areas including search, beacon, and weather processing.

AN (1) AD-A311 890/XAG

FG (2) 130200
130300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) A State-of-the-Art Study and Survey of Flexible Pavement Construction Jointing Techniques.

DN (9) Final rept.

AU (10) Regan, George L.

RD (11) Jun 1996

PG (12) 86 Pages

RS (14) DOT/FAA/AR-95/57

CT (15) DTFA01-90-Z-02069

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PAVEMENTS, *CONSTRUCTION

MAINTENANCE, DENSITY, ORGANIZATIONS, STATE OF THE ART, FIELD TESTS, REPORTS, LONG RANGE(TIME), SURVEYS, INTERNAL, LENGTH, SAMPLING, AIRPORTS, RUNWAYS, QUESTIONNAIRES, HIGHWAYS, FLEXIBLE MATERIALS, JOINTS, MATS

AB (27) This report summarizes the state-of-the-art construction joints in airport hot-mix asphalt flexible pavement surfaces. It also discusses and develops criteria for improved Federal Aviation Administration (FAA) standards and procedures. Work leading to its completion consisted of three parts: a literature and experience review. field sampling and analysis of construction density of airport pavements, and a survey of organizations involved in airport and highway pavement construction. The literature review covered highway and airport joint construction techniques, experiences, and reports of public and private organizations. Information was examined for useful joint and mat construction data and for potential improvements in construction techniques and specifications. Construction techniques for making joints were summarized. Field sampling and analysis consisted of examining the effects of manual and mechanical joint-forming techniques on constructed density at three FAA airport projects. Densities in the interior portions of paved areas were also analyzed. Data indicated that interior and joint portions of pavements were different when characterized by density. The survey portion included (1) developing a hot-mix construction and performance questionnaire for organizations; (2) distributing it to state highway agencies, FAA airports, U.S. Government offices and a few non-U.S. locations; and (3) analyzing the completed responses. The intended audience was pavement owners, designers, specifiers, and contractors. Responses from 130 organizations were presented on a question-by-question basis. Some of

the overall report findings indicated that airport runway longitudinal construction joint lengths easily exceed nine times the length of runways, creating a huge maintenance problem if they are not durable enough to resist traffic and environmental conditions.

AN (1) AD-A312 120/XAG

FG (2) 010500
130100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Reduced Configuration Approach Lighting System: Simulator Evaluation.

DN (9) Final rept.

AU (10) Katz, Eric S.

RD (11) Jun 1996

PG (12) 73 Pages

RS (14) DOT/FAA/AR-96/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *APPROACH LIGHTS

FLIGHT TESTING, ALIGNMENT, COSTS, GLOBAL POSITIONING SYSTEM, CONFIGURATIONS, PATTERNS, FLIGHT SIMULATORS, AIRPORTS, RUNWAYS, MARKER

LIGHTS, INDICATOR LIGHTS

ID (25) ALS(APPROACH LIGHTING SYSTEMS), RUNWAY ALIGNMENT INDICATOR LIGHTS

AB (27) Recent advances in Global Positioning System (GPS) capabilities have heightened the prospect of providing Category I, II, and III approach and landing capabilities at numerous airports. In addition to the considerable expense of installing approach lighting systems to support these approaches, many airports do not have the necessary real estate that would be required for the installation of standard approach lighting systems. In response to these concerns, an evaluation was needed to help determine if modified approach lighting system configurations could be developed that would be less expensive and occupy less real estate without compromising safety. This report describes an evaluation of a number of proposed approach lighting systems (ALS) modifications involving a reduction in the number of required lights, either through providing a lesser density within the standard configuration or through shortening the pattern length. The evaluation was conducted using the Federal Aviation Administration Boeing 727 flight simulator and employing the services of experienced air carrier and FAA pilots as volunteer subjects. Results of the test

effort revealed that the guidance that was provided by the medium intensity approach lighting system with runway alignment indicator lights (Configuration E) and the high intensity approach lighting system with sequenced flashers (Configuration H) that contain three lights, in lieu of five, per centerline barrette allowed all of the subject pilots to complete the approaches and landings safely. However, configurational changes to the standard approach lighting systems should not be made until these results are validated by actual weather flight testing.

AN (1) AD-A315 036/XAG

FG (2) 010500

050900

170800

190100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) CTX 5000 Screener Training for the FAA's Airport Demonstration Project.

DN (9) Final rept.

AU (10) Cormier, S. M.
Fobes, J. L.

RD (11) Jun 1996

PG (12) 104 Pages

RS (14) DOT/FAA/AR-96/70

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *JOB TRAINING, *AIRPORTS, *EXPLOSIVES DETECTION

TEST AND EVALUATION, SCHOOLS, EDUCATION, DEMONSTRATIONS, SITES, HUMAN

FACTORS ENGINEERING, COURSES(EDUCATION), PHILIPPINES

ID (25) *SCREENER TRAINING

AB (27) This document contains an edited version of the syllabus used to train airport screeners on how to operate and resolve alarms on the CTX 5000 Explosives Detection System. The training took place within the context of the Airport Demonstration Project, currently on-going at 3 airports: San Francisco, Atlanta, and Manila, Philippines. The actual syllabus used to train screeners at the demonstration sites differed in site-specific ways from the edited version presented here. The objectives of the training course were to provide screeners with the necessary skills and knowledge to competently operate the CTX 5000. This syllabus describes all aspects of the training curriculum, including screener performance objectives, materials and equipment

required for the course, the structure of lesson and final evaluations, and the classroom training agenda.

AN (1) AD-A309 382/XAG

FG (2) 010200

120900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Comparison of the Effects of Navigational Display Formats and Memory Aids on Pilot Performance.

DN (9) Final rept.

AU (10) Beringer, Dennis B.
Harris, Howard C., Jr

RD (11) May 1996

PG (12) 11 Pages

RS (14) DOT/FAA/AM-96/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *DISPLAY SYSTEMS, *MEMORY DEVICES, *COMPUTER AIDED

INSTRUCTION, *FLIGHT SIMULATION

INTEGRATED SYSTEMS, ENVIRONMENTS, AIRCRAFT, COCKPITS, PILOTS, REDUCTION, SHORT RANGE(TIME), NAVIGATION, REVERSIBLE, ERRORS,

FORMATS,

INSTRUMENTATION, INDEXES, MARKERS, INSTRUCTORS, GYROSCOPES, DIRECTIONAL, HORIZONTAL INDICATORS

ID (25) HSI(HORIZONTAL SITUATION INDICATOR), VOR(VERY HIGH FREQUENCY OMNI

RANGE)

AB (27) A great deal of effort has been invested in examining integrated instrumentation for advanced cockpits, but little comparable effort has been directed toward the greatest number of aircraft presently flying -those in the general aviation environment. This series of studies examined the benefits of a simple and widely available integrated instrument, the horizontal situation indicator (HSI), in the performance of simple navigational and orientational tasks by private pilots and instructor pilots. Tested in the context of the multiple-processor Basic General Aviation Research Simulator (BGARS), the private pilots exhibited significantly fewer navigational reversals and orientational errors when using the HSI (in comparison with their performances when using the traditional VOR and directional gyro combination). These results were consistent with but even more

definitive than those obtained for the instructor pilots. Similar benefits in procedural error reduction were also found when instrument index markers, or 'bugs,' were used as short-term memory aids.

AN (1) AD-A309 848/XAG

FG (2) 061100

061500

010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Aviation Accident Forensic Assessment: Comprehensive Single-Extraction Urine Screening Procedure.

DN (9) Final rept.

AU (10) Canfield, Dennis

White, Vicky

Soper, John

Kupiec, Tom

RD (11) May 1996

PG (12) 12 Pages

RS (14) DOT/FAA/AM-96/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *DRUGS, *URINE, *TOXICOLOGY, *AVIATION MEDICINE

FLUORESCENCE, WATER, ARRAYS, MASS SPECTROSCOPY, AERONAUTICS, MEDICINE,

METHANOLS, LIQUID CHROMATOGRAPHY, MISSIONS, THERAPY, EXTRACTION, RANGE(EXTREMES), PHOTODIODES, COCAINE, SCREENS(DISPLAYS), LITIGATION,

DRUG ABUSE, CHLOROFORM, CARDIOVASCULAR DISEASES, AMPHETAMINES, ANTIHISTAMINICS, DIURETICS

ID (25) *TRIAMTERENE, BENZODIAZEPINES, TOXICOLOGY, HPLC(HIGH PERFORMANCE LIQUID

CHROMATOGRAPHY), TLC(THIN LAYER CHROMATOGRAPHY)

AB (27) One of the missions of the Civil Aeromedical Institute (CAM I), Office of Aviation Medicine (OAM), Federal Aviation Administration (FAA), is to help assess the role of potential medical or drug related pilot impairment in aviation accidents. This requires the ability to identify a wide range of drugs and the medical conditions for which these drugs are prescribed. A single extraction screening procedure was developed to identify as many drugs as possible in urine, with minimal effort and cost. Triamterene, a diuretic, is easily identified using

HPLC and TLC, whereas it can not be easily identified using standard CC Mass Spectroscopy. On the other hand, atenolol is easily identified using HPLC and Mass Spectroscopy, but is not detected using TLC at therapeutic levels. Methadone is difficult to detect using HPLC with a photo diode array and fluorescence detector, but can easily be detected using TLC and confirmed by mass spectroscopy. Urine specimens are hydrolyzed using Bglucuronidase, and the specimen is then extracted using commercially purchased TOXI-LAB extraction tubes. After removing the TOXI-LAB organic phase, the remaining aqueous layer is washed with chloroform. The organic phase and the chloroform wash are combined, evaporated to dryness, and then reconstituted in 50uL of a methanol solution. A 10uL quantity of the methanol solution is then chromatographed, using HPLC with a photo diode array and fluorescence detector. The methanol solution is next analyzed using either TOXI-LAB or CC Mass Spectroscopy, depending on the compound detected using HPLC. When HPLC is negative, the extract is analyzed using the TOM-LAB% procedure. This method has proven successful in the identification of benzodiazepines (alpraxolam, temaxepam, diarepam, nordistepam, and oxarepam), cardiovascular medications, antihistamines, and other drugs that could have been missed using o

AN (1) AD-A309 962/XAG

FG (2) 061100

061500

010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Aviation Accident Forensic Assessment: Comprehensive Single-Extraction Urine Screening Procedure.

DN (9) Final rept.

AU (10) Canfield, Dennis

White, Vicky

Soper, John

Kupiec, Tom

RD (11) May 1996

PG (12) 13 Pages

RS (14) DOT/FAA/AM-96/17

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *AVIATION ACCIDENTS, *DRUGS, *URINE, *TOXICOLOGY, *AVIATION MEDICINE

DETECTORS, FLUORESCENCE, LAYERS, WATER, ARRAYS, MASS SPECTROSCOPY, COSTS, SOLUTIONS(GENERAL), METHANOLS, EXTRACTION, RANGE(EXTREMES), PHOTODIODES, LITIGATION, CHLOROFORM, ANTIHISTAMINICS, DIURETICS
ID (25) *TRIAMTERENE, BENZODIAZEPINES, HPLC(HIGH PERFORMANCE LIQUID CHROMATOGRAPHY), TLC(THINK LAYER CHROMATOGRAPHY)
AB (27) One of the missions of the Civil Aeromedical Institute (CAMI), Office of Aviation Medicine (OAM), Federal Aviation Administration (FAA), is to help assess the role of potential medical or drug related pilot impairment in aviation accidents. This requires the ability to identify a wide range of drugs and the medical conditions for which these drugs are prescribed. A single extraction screening procedure was developed to identify as many drugs as possible in urine, with minimal effort and cost. Triarnterene, a diuretic, is easily identified using HPLC and TLC, whereas it can not be easily identified using standard CC Mass Spectroscopy. On the other hand, atenolol is easily identified using HPLC and Mass Spectroscopy, but is not detected using TLC at therapeutic levels. Methadone is difficult to detect using HPLC with a photo diode array and fluorescence detector, but can easily be detected using TLC and confirmed by mass spectroscopy. Urine specimens are hydrolyxed using Beta-glucuronidase, and the specimen is then extracted using commercially purchased TOXI-LAB A extraction tubes. After removing the TOM-LAB organic phase, the remaining aqueous layer is washed with chloroform. The organic phase and the chloroform wash are combined, evaporated to dryness, and then reconstituted in 50uL of a methanol solution. A 10uL quantity of the methanol solution is then chromatographed, using HPLC with a photo diode array and fluorescence detector. The methanol solution is next analyxed using either TOXI-LAB or GC Mass Spectroscopy, depending on the compound detected using HPLC. When HPLC is negative, the extract is analyxed using the TOXI-LAB procedure.

23

AN (1) AD-A310 021/XAG

FG (2) 010200

050800

170700

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) A Comparison of the Effects of Navigational Display Formats and Memory Aids on Pilot Performance.

DN (9) Final rept.

AU (10) Beringer, Dennis B.
Harris, Howard C., Jr

RD (11) May 1996

PG (12) 11 Pages

RN (18) DOT/FAA/AM-96/16
XH-XD

RC (20) Unclassified report

DE (23) *COMPUTERIZED SIMULATION, *MEMORY(PSYCHOLOGY), *NAVIGATION, *APPLIED

PSYCHOLOGY, *FLIGHT SIMULATION

INTEGRATED SYSTEMS, ENVIRONMENTS, AIRCRAFT, COCKPITS,

PERFORMANCE(HUMAN), PILOTS, DISPLAY SYSTEMS, REDUCTION, MEMORY DEVICES,

SHORT RANGE(TIME), INTEGRATION, REVERSIBLE, ERRORS, FORMATS, INSTRUMENTATION, INDEXES, MARKERS, INSTRUCTORS, FLIGHT SIMULATORS, PSYCHOLOGY, GYROSCOPES, DIRECTIONAL, INSTRUMENT FLIGHT,

HORIZONTAL

INDICATORS

AB (27) A great deal of effort has been invested in examining integrated instrumentation for advanced cockpits, but little comparable effort has been directed toward the greatest number of aircraft presently flying -those in the general aviation environment. This series of studies examined the benefits of a simple and widely available integrated instrument, the horizontal situation indicator (HSI), in the performance of simple navigational and orientational tasks by private pilots and instructor pilots. Tested in the context of the multiple-processor Basic General Aviation Research Simulator (BGARS), the private pilots exhibited significantly fewer navigational reversals and orientational errors when using the HSI (in comparison with their performances when using the traditional VOR and directional gyro combination). These results were consistent with but even more definitive than those obtained for the instructor pilots. Similar benefits in procedural error reduction were also found when instrument index markers, or 'bugs,' were used as short-term memory aids.

AN (1) AD-A310 416/XAG

FG (2) 010600

120300

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION RESEARCH

TI (6) Estimated Detection System False Alarms from Cargo Compartment Fire Extinguisher Discharge Statistics.

DN (9) Technical note

AU (10) Eklund, Thor I.

RD (11) May 1996

PG (12) 15 Pages

RS (14) DOT/FAA/AR-TN96/56, AAR-423

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMMERCIAL AIRCRAFT, *STATISTICAL DATA, *FALSE ALARMS, *FIRE EXTINGUISHERS, *FIRE ALARM SYSTEMS ELECTRONICS, AUXILIARY, DETECTORS, POLYMERS, RATES, ELECTRICAL PROPERTIES, COMPARTMENTS, DUCTS, CARGO, POWER EQUIPMENT,

DOMESTIC, FIRE

EXTINGUISHING AGENTS, BOTTLES, FLUORINATED HYDROCARBONS, BAYS, ENGINE

NACELLES, BLEED SYSTEMS, TOILET FACILITIES, WHEEL WELLS

AB (27) Data on aircraft fleet service difficulties between 1988 and 1990 were used to estimate fire detector false alarms in the domestic commercial jet fleet. For Class C cargo compartments, data on fleet composition and utilization were used to establish false alarm rates using two levels of analytical detail. False alarms for engine nacelles, auxiliary power units, bleed air ducts, lavatories, wheel wells, and electrical and electronic bays are also considered. This treatment of false alarms is based on statistical documentation of fleet discharge events for halon extinguishing agent bottles.

AN (1) AD-A310 610/XAG

FG (2) 010500

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A National Airspace System Performance Analysis Capability (NASPAC) evaluation of the Impacts of the Center-(TRACON) Terminal Radar Approach Control Automation System (CTAS) on. Airport Capacity

DN (9) Technical note

AU (10) Richie, Joseph M.

Baart, Douglas

RD (11) May 1996

PG (12) 34 Pages

RS (14) DOT/FAA/CT-TN96/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CAPACITY(QUANTITY), *GROUND CONTROLLED APPROACH RADAR, *AIR SPACE,

*AIRPORTS

SIMULATION, QUANTITATIVE ANALYSIS, MODELS, PERFORMANCE TESTS,

COSTS,

DELAY, AIR TRAFFIC, AUTOMATIC, PASSENGERS

ID (25) NASPAC(NATIONAL AIRSPACE SYSTEM PERFORMANCE ANALYSIS CAPABILITY),

TRACON(TERMINAL RADAR APPROACH CONTROL), CTAS(CENTER TRACON AUTOMATION

SYSTEM), NAS(NATIONAL AIRSPACE SYSTEM), TFM(TRAFFIC FLOW

MANAGEMENT)

AB (27) This report documents the results and analysis of the Center-Terminal Radar Approach Control (TRACON) Automatic System (CTAS) on National Airspace System (NAS) performance. The NAS Performance Analysis Capability (NASPAC) Simulation Modeling System (SMS) was used to evaluate the impact CTAS would have on system level performance. Simulations were developed that included the effects CTAS would have on airport capacity and compared against simulations that did not include CTAS. Measures of delay and cost of delay were used as key metrics in the analysis. The results indicate that the deployment of CTAS would reduce operational delay and passenger delay by 34,405 and 2,277 hours respectively in 2005. These savings translate into nearly 100 million dollars.

AN (1) AD-A310 697/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Fixed Ground Antenna Radome (FGAR) Type VNI Operational Test and Evaluation (OT&E) Operational Test Final Report.

DN (9) Technical note

AU (10) Baker, Leonard H.

Sedgwick, Harold G.

RD (11) May 1996

PG (12) 41 Pages

RS (14) DOT/FAA/CT-TN96/18

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RADOMES

GROUND LEVEL, MILITARY REQUIREMENTS, DEGRADATION, ELECTROMAGNETIC

PROPERTIES, OPERATIONAL EFFECTIVENESS, RADAR ANTENNAS, ANTENNA

RADIATION PATTERNS, RADAR STATIONS

ID (25) FGAR(FIXED GROUND ANTENNA RADOMES)

AB (27) This report documents the Operational Test and Evaluation (OT&E) operational testing performed on the Type V/VI, Fixed Ground Antenna Radome (FGAR) First Article. The Type V/VI FGAR replaces the original radome at Air Route Surveillance Radar (ARSR) - 3 sites. This testing was performed on the Federal Aviation Administration's (FAA) Southern Region's Newport, Mississippi (MS) ARSR-3 En Route Radar Facility (QNM). The testing was limited to electromagnetic performance characteristics evaluation. Electromagnetic performance data was collected by the Memphis Air Route Traffic Control Center (ARTCC) (ZME), the only ARTCC which receives Newport ARSR-3 En Route Radar Facility (QNM) data. The testing showed no degradation of the antenna electromagnetic patterns. The testing demonstrated that the FGAR meets the Operational Suitability and Operational Effectiveness requirement of the FAA.

AN (1) AD-A312 389/XAG

**FG (2) 010300
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Federal Aviation Administration Plan for Research, Engineering, and Development (1996).

RD (11) May 1996

PG (12) 211 Pages

RN (18) XH-FAA

RC (20) Unclassified report

NO (21) Report of the Federal Aviation Administration to the United States Congress pursuant to to 49 United States Code 44501(c).

DE (23) *COST EFFECTIVENESS, *AIRPORTS, *SYSTEMS MANAGEMENT AIRCRAFT, COMMERCIAL AVIATION, COSTS, AIR SPACE, DELAY, RESOURCES

AB (27) The Federal Aviation Administration (FAA) manages and operates the National Airspace System (NAS), a significant national resource. The demands on this system are continuously growing, and changing technologies provide the opportunity to improve system effectiveness and efficiency. Today, 22 of the country's largest airports experience more than 20,000 hours of delay per year, and the number of major airports with more than 20,000 hours of delay is projected to grow to 33 by 2003. With an average aircraft operating cost of approximately \$1,600 per hour of delay, airlines operating at each of these airports currently incur at least \$32 million in annual delay costs.

AN (1) AD-A355 576/XAG

**FG (2) 010600
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) United States Standard Flight Inspection Manual

RD (11) May 1996

PG (12) 269 Pages

RS (14) FAA-8200.1A

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR NAVIGATION, *INSPECTION, *INSTRUCTION MANUALS

FLIGHT CREWS, DIRECTION FINDING, AIR TRAFFIC CONTROL SYSTEMS, FLIGHT

INSTRUMENTS, SEARCH RADAR

AB (27) The purpose of this manual is to prescribe standardized procedures for the flight inspection of air navigation services. It is not intended as authorization for an agency to assume flight inspection authority over any group of services which are not now under its jurisdiction. Similarly, it carries no designation of responsibility within any agency unless such has been so designated in its usual procedural manner, such as general orders, regulations, etc. This manual is directive upon all personnel charged with the responsibility for execution of the flight inspection mission, when such personnel or organization is so designated by its agency. Compliance with this manual, however, is not a substitute for common sense and sound judgment. Nothing in this manual shall be construed to relieve flight inspection crews or supervisory personnel of the responsibility of exercising initiative in the execution of the mission, or from taking such emergency action as the situation warrants.

AN (1) AD-A306 964/XAG

**FG (2) 210200
010300
131200
210800**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aircraft Cabin Smoke Control with Converging-Diverging Nozzles.

DN (9) Technical note

AU (10) Eklund, Thor I.

RD (11) Apr 1996

PG (12) 37 Pages

RN (18) DOT/FAA/AR-TN-96/37

XH-XD

RC (20) Unclassified report

DE (23) *CONTROL, *SMOKE, *AIRCRAFT CABINS, *CONVERGENT DIVERGENT NOZZLES

PEAK VALUES, EXPERIMENTAL DATA, INSTALLATION, PRESSURE, SAFETY, NOZZLES, FLOW, FIRES, FLIGHT ENVELOPE, ALTITUDE, EVACUATION, VENTING

ID (25) IN-FLIGHT FIRE, BOEING 757

AB (27) The characteristics of converging-diverging nozzles are compared to those of converging nozzles for use in aircraft cabin smoke control.

The peak flow flight regimes for the two different nozzles are compared by means of test data taken on a Boeing 757. The converging-diverging nozzle is shown as capable of maintaining peak volumetric flow over a wide range of airplane cabin pressure and flight altitude combinations. Sample capacities and flow schedules are presented for installation of converging-diverging nozzles in Boeing 737 aircraft. p3

AN (1) AD-A307 705/XAG

FG (2) 010300

010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) JAA Airport Lighting System Requirements Simulator Evaluation.

DN (9) Technical rept.

AU (10) Katz, Eric S.

RD (11) Apr 1996

PG (12) 47 Pages

RS (14) DOT/FAA/AR-TN95/11343035

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *LIGHTING EQUIPMENT, *FLIGHT SIMULATORS

TEST AND EVALUATION, REQUIREMENTS, UNITED STATES, FLIGHT CREWS, ILLUMINATION, VISIBILITY, LOW LEVEL, TAKEOFF, CHARTS, AIRPORTS, RUNWAYS, AIRWORTHINESS, LANDING

AB (27) The European Joint Aviation Authority (JAA) introduced its Joint Airworthiness Requirements for Operations (JAR-OPS1) in April 1995. In general the airport lighting system requirements and associated operating minima authorized by the JAA for use during low-visibility takeoff and landing operations are lower than that used by the United States (U.S.) and American air carrier operators. The rationale for JAA's lower operating minima is based primarily on several years of operating experience by various European ICAO member states. In an

effort to standardize aircrew procedures, training, and charting requirements, both the Federal Aviation Administration (FAA) and the JAA would like to harmonize low-visibility operating requirements and minima to the maximum extent possible. This report describes a simulator evaluation to determine the feasibility of adopting the JAA lighting system requirements and operating minima as the FAA standard for low-visibility operations. The data results from this evaluation will be used by FAA Headquarters to formulate the U.S. position on adopting the JAA operational requirements for low-visibility operations.

AN (1) AD-A308 198/XAG

FG (2) 070200

070400

131200

210200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Characterization of an Oxygen/Nitrogen Permeable Membrane System.

DN (9) Final rept.

AU (10) Abramowitz, Allan

Boris, Paul

RD (11) Apr 1996

PG (12) 29 Pages

RS (14) DOT/FAA/AR-95/91

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERMEABILITY, *NITROGEN, *OXYGEN, *MEMBRANES, *FIRE SUPPRESSION TEST AND EVALUATION, FIBERS, EXPERIMENTAL DATA, OPTIMIZATION,

AIRCRAFT,

GASES, PURITY, FLOW RATE, SEPARATION, AIR PRESSURE, ENRICHMENT, STREAMS

ID (25) HOLLOW FIBER, INERTING

AB (27) The Federal Aviation Administration is investigating the use of alternate technologies for fire suppression aboard aircraft. A system was built using hollow fiber permeable selective membranes to separate air into its two major constituent gases, namely oxygen and nitrogen. System performance was characterized with regard to pressure, flow, temperature, and their affects on the nitrogen enriched stream. Test results indicate that nitrogen stream purity varies directly with air pressure and temperature and inversely with flow rate. The test data also indicate that there is an optimum combination of flow and nitrogen

purity for inerting a fixed volume. p3

AN (1) AD-A308 316/XAG

FG (2) 150500

010500

210400

240300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT SAFETY AND ST ANDARDS

TI (6) Report to Congress. Potential Hazards to Aircraft By Locating Waste Disposal Sites in the Vicinity of Airports.

DN (9) Final rept.

AU (10) Cleary, Ed

RD (11) 01 Apr 1996

PG (12) 24 Pages

RS (14) DOT/FAA/AS/96-1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PAVEMENTS, *BIRD STRIKES, *WASTE DISPOSAL, *POLLUTION ABATEMENT, *RUNWAYS, *HAZARDOUS MATERIALS AIRCRAFT, HAZARDS, FACILITIES, SITES, HISTORY, PATTERNS, DISPOSAL, SOLID WASTES, ACCIDENTS, MUNICIPALITIES

ID (25) SOLID-WASTE FACILITY, HAZARDS TO RUNWAYS

AB (27) This report was developed from historical data, past studies, and research on the incidents and accidents involving bird strikes and aircraft and on the potential of solid waste disposal sites to attract and sustain bird movements. This report is in response to Section 203(b)(2) of the Airport and Airway Safety, Capacity, Noise Improvement, and Intermodal Transportation Act of 1992. This section directed a study to be conducted to determine whether a municipal solid waste facility, located within a 5-mile radius of the end of a runway, has the potential for attracting or sustaining bird movements (from feeding, watering, or roosting in the area) and poses a hazard to runways or approach and departure patterns of aircraft.

AN (1) AD-A308 349/XAG

FG (2) 010500

060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Ophthalmic Requirements and Considerations for the En Route Air Traffic Control Specialist: An Ergonomic Analysis of the Visual Work Environment.

DN (9) Final rept.

AU (10) Nakagawara, Van B.

Coffey, James D.

Montgomery, Ronald W.

RD (11) Apr 1996

PG (12) 16 Pages

RS (14) DOT/FAA/AM-95/12

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *VISUAL PERCEPTION REQUIREMENTS, MEASUREMENT, UNITED STATES GOVERNMENT, ENVIRONMENTS,

AIRCRAFT, MODELS, CLINICAL MEDICINE, RADAR, AIR FORCE PERSONNEL, MEDICINE, TAPES, MALES, VISION, SPECIALISTS, PHYSICIANS, SURGERY, ERGONOMICS, HEIGHT, CONSOLES, FEMALES, OPHTHALMOLOGY, VISUAL DEFECTS,

EYE MOVEMENTS, AVIATION MEDICINE

AB (27) The Federal Air Surgeon requested continued investigation of visual disorders and vision corrective devices as to their relevance to the medical certification of airmen and controllers. The en route Air Traffic Control Specialist (ATCS) works with a unique radar console unit when controlling aircraft. To better understand the visual requirements of this work environment, an ergonomic study of the radar console was performed. A vertical stand with a tape measure was placed 10.2 cm (4.0 inches) from the front of the current model radar console used by en route Acts. Measurements from two eye height levels, representing the low female value (5th percentile) and the high male value (95th percentile), to four primary components of the radar console were obtained. Accommodation, vergence, and vision demands were calculated. The accommodative range was from 0.79 D to 1.81 D and the vergence demand range from 4.61 to 10.35. Version demands were generally large due to the size and placement of the primary components. Of the 80 version measurements calculated, only 17 (21.25%) required less than 150 deg of eye movements. The accommodative and convergence demands of an en route radar console would not be expected to have a substantial clinical effect on vision for pre- and early-presbyopic controllers with normal phoria and fusional reserve capabilities. Version demands are substantial and may be visually stressful to the ATCS. Clinical ophthalmic considerations for correcting the vision at the radar console of these controllers, particularly presbyopic ATCSs, are reviewed. These data may be used by

the Office of Aviation Medicine in addressing occupational and medical questions, and their associated regulatory implications.

AN (1) AD-A308 354/XAG

FG (2) 010500
050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Differential Prediction of FAA Academy Performance on the Basis of Gender and Written Air Traffic Control Specialist Aptitude Test Scores.

DN (9) Final rept.

AU (10) Young, Willie C.
Broach, Dana
Farmer, William L.

RD (11) Apr 1996

PG (12) 20 Pages

RS (14) DOT/FAA/AM-96/13

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *APTITUDE TESTS
TEST AND EVALUATION, JOBS, SKILLS, SIZES(DIMENSIONS), PREDICTIONS,
PERFORMANCE TESTS, RATES, REGRESSION ANALYSIS, CORRELATION,

ADVERSE

CONDITIONS, INSTRUCTIONS, EQUATIONS, SPECIALISTS, PERSONNEL

SELECTION,

BIAS, WOMEN, LOW RATE, SELECTION, SCORING

AB (27) The technical fairness of the written air traffic control specialist (ATCS) aptitude test battery was investigated within the framework of the Uniform Guidelines on Employee Selection Procedures (29 CFR 1607).

First, the adverse impact of using a composite score on the test battery was evaluated on an archival sample of 170,578 job applicants. Mean score differences by gender of 0.35 SD in the favor of men were found, suggesting that adverse impact on women could be expected from use of test scores in selection. Analysis of selection rates by gender found that women were classified as eligible for employment consideration on the basis of composite test scores at a lower rate (38.5%) than men (50.4%). Step-down hierarchical regression analysis (Lautenschlager & Mendoza, 1986) was used to investigate differential prediction of performance in initial ATCS training at the Federal Aviation Administration Academy in a sample of 9,552 first-time competitive entrants. Analysis based on correlations corrected for explicit and implicit restriction in range found significant

differences in slopes and intercepts by gender, suggesting that separate regression equations were appropriate to predict Academy performance for the genders. The practical significance of the statistically small effect sizes is considered within the framework of current equal employment opportunity legislation and case law in the discussion of these results. The alternative explanation that these results reflect gender differences in job-related abilities, rather than test bias, is considered.

AN (1) AD-A308 592/XAG

FG (2) 060400
170703
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Ophthalmic Requirements and Considerations for the En Route Air Traffic Control Specialist: An Ergonomic Analysis of the Visual Work Environment.

DN (9) Final rept.

AU (10) Nakagawara, Van B.
Coffey, James D.
Montgomery, Ronald W.

RD (11) Apr 1996

PG (12) 16 Pages

RS (14) DOT/FAA/AM-95/12

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *VISION, *AVIATION SAFETY, *COLLISION
AVOIDANCE, *VISUAL ACUITY, *AVIATION MEDICINE
REQUIREMENTS, MEASUREMENT, UNITED STATES GOVERNMENT,

ENVIRONMENTS,

AIRCRAFT, COMPUTER COMMUNICATIONS, MODELS, AIR, CLINICAL MEDICINE,
RADAR, DISPLAY SYSTEMS, AIR FORCE PERSONNEL, MEDICINE, PROTECTIVE
COATINGS, TAPES, MALES, EYE, SPECIALISTS, PHYSICIANS, SURGERY,
ERGONOMICS, HEIGHT, CONSOLES, FEMALES, LENSES, OPHTHALMOLOGY,

COLOR

VISION

ID (25) IFR(INSTRUMENT FLIGHT RULES), VFR(VISUAL FLIGHT RULES), PVD(PLAN
VIEW

DISPLAY), ANK(ALPHANUMERIC KEYBOARD), VISUAL FIELDS

AB (27) The Federal Air Surgeon requested continued investigation of visual disorders and vision corrective devices as to their relevance to the

medical certification of airmen and controllers. The en route Air Traffic Control Specialist (ATCS) works with a unique radar console unit when controlling aircraft. To better understand the visual requirements of this work environment, an ergonomic study of the radar console was performed. A vertical stand with a tape measure was placed 10.2 cm (4.0 inches) from the front of the current model radar console used by en route Acts. Measurements from two eye height levels, representing the low female value (5th percentile) and the high male value (95th percentile), to four primary components of the radar console were obtained. Accommodation, vergence, and vision demands were calculated. The accommodative range was from 0.79 D to 1.81 D and the vergence demand range from 4.61A to 10.35A. Version demands were generally large due to the size and placement of the primary components. Of the 80 version measurements calculated, only 17 (21.25%) required less than 150 of eye movements. The accommodative and convergence demands of an en route radar console would not be expected to have a substantial clinical effect on vision for pre- and early-presbyopic controllers with normal phoria and fusional reserve capabilities. Version demands are substantial and may be visually stressful to the ATCS. Clinical ophthalmic considerations for correcting the vision at the radar console of these controllers, particularly presbyopic ATCSs, are reviewed. These data may be used by the Office of Aviation Medicine in addressing occupational and medical questions, and their associated regulatory implications.

AN (1) AD-A308 948/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Dummy and Injury Criteria for Aircraft Crashworthiness.

DN (9) Final rept.
AU (10) Marcus, Jeffrey H.
RD (11) Apr 1996
PG (12) 9 Pages
RS (14) DOT/FAA/AM-96/11
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIRCRAFT, *WOUNDS AND INJURIES, *AIRCRAFT SEATS, *CRASHWORTHINESS
REQUIREMENTS, MODELS, IMPACT TESTS, PROBABILITY, PROTECTION, BODIES,
DYNAMIC TESTS, ANTHROPOMETRY, MANNEQUINS

ID (25) *DUMMIES, IMPACT LOADS

AB (27) Since 1988, newly type-certificated aircraft are required to comply with stringent crashworthiness requirements. Central to these more stringent requirements is a dynamic test that assesses the potential for injury for someone exposed to similar conditions. In this report, the techniques and reference values used for measuring the impact protection offered by aircraft seating systems are reviewed. General requirements of a crash dummy are enumerated. The use and limitations of various designs of adult-sized front and side dummies are discussed, and relationships relating dynamic variables measured with a dummy to the probability of an injury are referenced.

AN (1) AD-A309 237/XAG

FG (2) 010200

120500

230200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Use of Off-The-Shelf PC-Based Flight Simulators for Aviation Human Factors Research.

DN (9) Final rept.

AU (10) Beringer, Dennis B.

RD (11) Apr 1996

PG (12) 17 Pages

RN (18) DOT/FAA/AM-96/15

XH-XD

RC (20) Unclassified report

DE (23) *COMPUTERIZED SIMULATION, *HUMAN FACTORS ENGINEERING, *FLIGHT SIMULATION

COMPUTER PROGRAMS, CONTROL, SIMULATION, THROTTLING, FLIGHT

TRAINING,

LOW COSTS, COMPUTERS, PERFORMANCE(ENGINEERING), OFF THE SHELF EQUIPMENT, DISPLAY SYSTEMS, VARIABLES, AERONAUTICS, INTEGRATION, NAVIGATION, PACKAGING, STANDARDIZATION, FLIGHT INSTRUMENTS, MAPS, LABORATORIES, EXTERNAL, MICROCOMPUTERS, APPLIED PSYCHOLOGY,

FLIGHT

SIMULATORS, ASSEMBLY, RADIOFREQUENCY, ANALOG SYSTEMS,

INSTRUMENT

FLIGHT, QUADRANTS

AB (27) Flight simulation has historically been an expensive proposition, particularly if out-the-window views were desired. Advances in computer technology have allowed a modular, off-the-shelf flight simulation

(based on 80486 processors or Pentiums) to be assembled that has been adapted, with minimal modification, for conducting general aviation research. This simulation includes variable flight instrumentation, forward, 45 and 90 degree left external world views, and a map display. Control inputs are provided by high-fidelity analog controls (e.g., damped and self-centering yoke, high-performance throttle quadrant, gear, flap, and trim controls; and navigation radio frequency select). The simulation is based upon two commercially available flight simulation software packages, one originally designed as an instrument flight trainer and the other as a 'game'-type flight simulation. The provisions of these packages are discussed highlighting their particular research capabilities, as well as their limitations. The comparatively low cost and ease of assembly/integration allow multiple 'standardized' systems to be distributed for cooperative inter-laboratory studies. The approach appears to have utility for both research and training.

AN (1) AD-A309 243/XAG

FG (2) 120500

170800

190100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) An Evaluation of the Explosives Detection System CTX5000 User Interface for Alarm Resolution.

DN (9) Final rept.

AU (10) Fobes, J. L.

Cormier, S. M.

Barrientos, J. M.

RD (11) Apr 1996

PG (12) 15 Pages

RS (14) AAR-510

RN (18) DOT/FAA/AR-96/50

XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *MAN COMPUTER INTERFACE, *COMPUTERIZED TOMOGRAPHY, *WARNING SYSTEMS,

*EXPLOSIVES DETECTION

SCANNING, COMPUTER PROGRAMS, INPUT, INTERFACES, RESOLUTION, X

RAYS,

WORK STATIONS, MANUAL OPERATION, CHANNELS, INFRASTRUCTURE

AB (27) This report provides an evaluation of the CTX5000 human-computer

interface including the X-ray interface, the Computed Tomography (CT) -scan interface, the manual input interface channels, and the workstation design. It does not make recommendations for the reconfiguration of screens nor does it make recommendations as to possible changes in the software infrastructure.

23

AN (1) AD-A309 377/XAG

FG (2) 061100

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Analysis of Benzodiazepines in Forensic Urine Samples.

DN (9) Final rept.

AU (10) Kupiec, Thomas C.

Canfield, Dennis V.

White, Vicky L.

RD (11) Apr 1996

PG (12) 13 Pages

RS (14) DOT/FAA/AM-96/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DRUGS, *IMMUNOASSAY, *URINE, *TOXICOLOGY, *DIAZEPAM

POLARIZATION, FLUORESCENCE, ENZYMES, RESEARCH FACILITIES, MASS

SPECTROSCOPY, MEDICINE, SAMPLING, AVIATION ACCIDENTS,

LABORATORIES,

LIVER, HYDROLYSIS, BLOOD, LITIGATION, RADIOIMMUNOASSAY

ID (25) *BENZODIAZEPINE, CLONAZEPAM, FLUOXETINE, BLOOD SAMPLES

AB (27) The FAA Toxicology and Accident Research Laboratory reports the

presence of any drug detected at therapeutic or subtherapeutic levels

and the medical condition for which the drug may have been used.

Specimens from the pilot of a fatal aviation accident in 1992 were

suspected of containing fluoxetine and clonazepam. Initial screening

tests using fluorescence polarization immunoassay of a urine specimen

revealed 86 ng/ml of a benzodiazepine. Blood from this case was

screened using radioimmunoassay and a benzodiazepine was detected at a

level in excess of 200 ng/ml. No benzodiazepine was detected in the

urine specimen when it was initially tested using HPLC with no

hydrolysis of the specimen. Temazepam was eventually identified in

urine by HPLC and Mass Spectroscopy, after enzyme hydrolysis of the

urine using beta-glucuronidase. The blood was found to contain 44 ng/ml

of temazepam, 83 ng/ml of fluoxetine, and 138 ng/ml of norfluoxetine.

The liver was found to contain 145 ng/ml of temazepam. No tests were performed on the liver for fluoxetine. The identification of temazepam in urine would have been impossible without the enzyme hydrolysis of the specimen prior to extraction and identification. Benzodiazepines are among the most prescribed drugs and a procedure is needed to assure that these drugs will be detected and identified in urine.

AN (1) AD-A310 015/XAG

FG (2) 010200

050800

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Use of Off-The-Shelf PC-Based Flight Simulators for Aviation Human Factors Research.

DN (9) Final rept.

AU (10) Beringer, Dennis B.

RD (11) Apr 1996

PG (12) 17 Pages

RS (14) DOT/FAA/AM-96/15

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *OFF THE SHELF EQUIPMENT, *HUMAN FACTORS ENGINEERING, *APPLIED PSYCHOLOGY, *FLIGHT SIMULATORS

THROTTLING, FLIGHT TRAINING, LOW COSTS, COMPUTERS, DISPLAY

SYSTEMS,

VARIABLES, AERONAUTICS, INTEGRATION, NAVIGATION, STANDARDIZATION,

FLIGHT INSTRUMENTS, MAPS, LABORATORIES, MICROCOMPUTERS,

ASSEMBLY,

PSYCHOLOGY, FLIGHT SIMULATION, RADIOFREQUENCY, ANALOG SYSTEMS,

GAME

THEORY, INSTRUMENT FLIGHT, QUADRANTS

AB (27) Flight simulation has historically been an expensive proposition, particularly if out-the-window views were desired. Advances in computer technology have allowed a modular, off-the-shelf flight simulation (based on 80486 processors or Pentiums) to be assembled that has been adapted, with minimal modification, for conducting general aviation research. This simulation includes variable flight instrumentation, forward, 45 and 90 degree left external world views, and a map display. Control inputs are provided by high-fidelity analog controls (e.g., damped and self-centering yoke, high-performance throttle quadrant, gear, flap, and trim controls; and navigation radio frequency select).

The simulation is based upon two commercially available flight simulation software packages, one originally designed as an instrument flight trainer and the other as a game-type flight simulation. The provisions of these packages are discussed highlighting their particular research capabilities, as well as their limitations. The comparatively low cost and ease of assembly/integration allow multiple 'standardized' systems to be distributed for cooperative inter-laboratory studies. The approach appears to have utility for both research and training.

AN (1) AD-A310 105/XAG

FG (2) 131200

240300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) User Preferred Fire Suppression Agent for Lavatory Trash Container Fire Protection.

DN (9) Final rept.

AU (10) Grimstad, Greg

RD (11) Apr 1996

PG (12) 18 Pages

RS (14) DOT/FAA/AR-96/8, AAR-422

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *WASTE DISPOSAL, *FIRE EXTINGUISHING AGENTS, *FIRE EXTINGUISHERS QUANTITY, WATER, COMMERCIAL AVIATION, SURVEYS, AIRFRAMES, AIRCRAFT FIRES, FIRE SUPPRESSION, AIRCRAFT FIRE CONTROL SYSTEMS, TOILET FACILITIES

ID (25) HALON 1301, HALOCARBONS, LAVATORIES

AB (27) The results of the survey sent to airlines and airframe manufacturers on lavatory trash receptacle fire suppression agent preference are compiled in this report. Tests are recommended to define the quantity of water required for fire extinguishment.

AN (1) AD-A310 288/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Evaluation of Approach Path Indicator Systems for Heliports.

DN (9) Final rept.

AU (10) Bagot, Keith
RD (11) Apr 1996
PG (12) 237 Pages
RS (14) DOT/FAA/AR-95/102
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *FLIGHT PATHS, *APPROACH INDICATORS
TEST AND EVALUATION, REQUIREMENTS, ANGLES, GROUND LEVEL, FLIGHT
TESTING, PRODUCTION, PILOTS, LIGHT, PATHS, TRACKING, FEEDBACK,
INSTALLATION, CIVIL AVIATION, GUIDANCE, INDICATORS, VISUAL FLIGHT
RULES, ACCEPTABILITY, VISUAL SIGNALS, PHOTOMETRY, LANDING, INDEX
TERMS,
HELIPORTS
AB (27) The objective of this report was to determine the acceptability of
using existing approach path indicator technology to develop the
criteria for establishing production and installation requirements for
approach path indicators for heliports. The approach path indicators
give the pilot a visual reference as to his proximity to a specific
approach angle to the heliport in visual flight rule (VFR) landing
operations. This effort required photometric testing for actual light
beam characteristics, the collection of ground tracking data, and
flight testing for pilot feedback as to their acceptability of the
systems. Results of the evaluation showed that all three existing
approach path indicator systems provided the necessary guidance to the
pilot to successfully conduct VFR landing operations, and that the data
collected could be used to establish criteria for their production and
installation.

AN (1) AD-A310 744/XAG
FG (2) 120500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) National Airspace System Performance Assessment for Year 2010.
DN (9) Technical note
AU (10) Baart, Douglas
CHeung, Anny
RD (11) Apr 1996
PG (12) 32 Pages
RS (14) DOT/FAA/CT-TN96/5
RN (18) XH-XD
RC (20) Unclassified report
AL (22) Availability: Document partially illegible.

DE (23) *COMPUTERIZED SIMULATION, *AIR TRAFFIC CONTROL SYSTEMS, *AIR
SPACE
GROUND LEVEL, MODELS, PERFORMANCE TESTS, GROWTH(GENERAL),
DELAY, PARTS,
CALIFORNIA, INTERNATIONAL AIRPORTS, AIRPORTS, RUNWAYS, FLORIDA, LOS
ANGELES(CALIFORNIA), AIR TRAFFIC CONTROL TERMINAL AREAS
AB (27) This report documents the assessment of the National Airspace System
(NAS) for the year 2010. The NAS Performance Analysis Capability
(NASPAC) simulation model was used to simulate the future air traffic
control (ATC) system. Airport, airfield, and technological improvements
expected to be completed by year 2010 were included in the analysis.
These improvements are outlined in the 1994 Aviation System Capacity
Plan. Future traffic growth for each of the airports modeled by NASPAC
were derived from the 1993 Terminal Area Forecasts (TAF). The study
suggests that about 70 percent of the total system delay is attributed
to ground operations for the year 2010. Ground delay consists of ground
holds, pushback from gates, and taxi procedures from active runways.
Airports that are the largest contributors of system delay include John
Wayne Airport-Orange County Airport, Miami International Airport, Los
Angeles International Airport, and Chicago O'Hare International
Airport. Areas of highest airspace activity include parts of southern
California, Florida, Salt Lake City, and Denver.
23

AN (1) AD-A306 642/XAG
FG (2) 010600
050300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
POLICY AND P LANS
TI (6) FAA Aviation Forecasts - Fiscal Years 1996-2007.
RD (11) Mar 1996
PG (12) 217 Pages
RS (14) FAA-APO-96-1
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *ECONOMIC ANALYSIS, *FORECASTING, *CIVIL AVIATION, *MILITARY
TRANSPORTATION
UNITED STATES GOVERNMENT, AIRCRAFT INDUSTRY, MILITARY AIRCRAFT,
GROWTH(GENERAL), AIR TRAFFIC CONTROL SYSTEMS, AIRPORT CONTROL
TOWERS,
COMMERCIAL AVIATION, AIRCRAFT CARRIERS, AIR TRANSPORTATION,
PLANNING

PROGRAMMING BUDGETING, FEDERAL BUDGETS, INFLATION(ECONOMICS)
ID (25) RPM(REVENUE PASSENGER MILES)

AB (27) This report contains the Fiscal Years 1996-2007 Federal Aviation (FAA) forecasts of aviation activity at FAA facilities. These include airports with both FAA and contract control towers, air route traffic control centers, and flight service stations. Detailed forecasts were developed for the major users of the National Aviation System: air carriers, air taxi/commuters, general aviation, and military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information which can be used by State and local authorities, the aviation industry, and the general public. The outlook for the 12-year forecast period is for moderate economic growth, stable real fuel prices, modest inflation, and continued moderate to strong growth in the demand for aviation services. Based on these assumptions, aviation activity is forecast to increase by 19.2 percent at the combined FAA and contract towered airports (439 in 1996) and 26.6 percent at air route traffic control centers. The general aviation active fleet is forecast to increase by almost 5.0 percent during the forecast period while general aviation hours flown grow by almost 10.0 percent. Scheduled domestic revenue passenger miles (RPMs) are forecast to increase 57.3 percent, scheduled international RPMs are forecast to increase by 84.9 percent, and regional/commuter RPMs are forecast to increase by 116.7 percent.

AN (1) AD-A307 148/XAG

FG (2) 010600
250400

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Methods and Metrics of Voice Communications.

DN (9) Final rept.

AU (10) Kanki, Barbara G.
Prinzo, O. V.

RD (11) Mar 1996

PG (12) 274 Pages

RN (18) DOT/FAA/AM-96/10
XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *VOICE COMMUNICATIONS

SIGNAL PROCESSING, SOFTWARE ENGINEERING, SYMPOSIA, FLIGHT CREWS,
PERFORMANCE(HUMAN), PILOTS, SIGNAL TO NOISE RATIO,
TEAMS(PERSONNEL),

AIR TRAFFIC CONTROL SYSTEMS, HUMAN FACTORS ENGINEERING, AVIATION
ACCIDENTS, DATA ACQUISITION, ACOUSTIC SIGNALS, SPEECH RECOGNITION,
SPEECH ANALYSIS, SPEECH TRANSMISSION, ACOUSTIC FILTERS, AVIATION
SAFETY, AIR TRAFFIC CONTROLLERS, ACOUSTIC DATA, COMPUTATIONAL
LINGUISTICS, SYNTAX, WORKSHOPS, WORD RECOGNITION,
PSYCHOACOUSTICS,

AUDITORY PERCEPTION, REACTION(PSYCHOLOGY), PHONETICS

ID (25) PROCEEDINGS

AB (27) This report consists of the proceedings of the Methods and Metrics of Voice Communication Workshop organized by the FAA - Civil Aeromedical Institute, NASA-Ames Research Center, and Armstrong Laboratory - Brooks Air Force Base, held May 13-14, 1994 in San Antonio, Texas. The goal of the meeting was to further our understanding of voice communications in aviation operations by convening a group of language researchers to discuss their experiences with current methods, tools, approaches, etc. The participants came from academic, government and military laboratories, as well as private industry, and their collective expertise included applications conducted in a variety of field, laboratory and simulation environments. This Proceedings is presented in 3 parts: (1) presentations on discourse and acoustic processes, (2) demonstrations of software aids for collecting, coding and analyzing communication data, and (3) an appendix of related supplementary materials and reprints from other publications. Because language researchers share many issues and problems in the development of appropriate and effective methods and metrics, the goal of the workshop was for the attendees to learn from each other's experiences and expertise and to make these insights available to others.

AN (1) AD-A307 201/XAG

FG (2) 010309
131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) The Development of a Flammability Test Method for Aircraft Blankets.

DN (9) Final rept.

AU (10) Cahill, Patricia

RD (11) Mar 1996

PG (12) 36 Pages

RN (18) DOT/FAA/AR-96/15
XH-XD

RC (20) Unclassified report

DE (23) *COMMERCIAL AIRCRAFT, *FIRES, *FLAMMABILITY, *BLANKETS

TEST AND EVALUATION, COMMERCE, AIRCRAFT, PERFORMANCE TESTS, TEST

METHODS, CONSISTENCY, IGNITION, OPERATORS(PERSONNEL), BURNERS
ID (25) *AIRCRAFT BLANKETS, POLYESTER, FLAMMABILITY, MATERIAL FIRE TESTS
AB (27) Flammability testing of aircraft blankets was conducted in order to develop a fire performance test method and performance criteria for blankets supplied to commercial aircraft operators. Aircraft blankets were subjected to vertical Bunsen burner testing, 4-ply vertical testing, full-scale match and cigarette testing, and single- and 4-ply horizontal testing. It was found that the 4-ply horizontal test correlates well with the full-scale match tests, produces consistent test results, and realistically evaluates ease of ignition.

AN (1) AD-A307 589/XAG

FG (2) 010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Evaluation of L-804 Elevated Runway Guard Light Fixtures.

DN (9) Technical note

AU (10) Katz, Eric

RD (11) Mar 1996

PG (12) 21 Pages

RS (14) DOT/FAA/AR-TN96/18

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *LIGHTING EQUIPMENT, *RUNWAYS

ANGLES, STEADY STATE, PILOTS, INTENSITY, RATES, VOLTAGE, COMBUSTION, VERTICAL ORIENTATION, PROTECTIVE EQUIPMENT, GUIDANCE, VISUAL PERCEPTION, HORIZONTAL ORIENTATION, AIMING, REGULATIONS, NIGHT

FLIGHT,

VISUAL FLIGHT RULES, INSTRUMENT FLIGHT, FLASHES, YELLOW(COLOR)

AB (27) The number of inadvertent runway incursions has grown during recent years, increasing the importance of protective visual guidance systems for incursion prevention. One such visual system is the L-804 elevated runway guard light fixture. Also known as a wig-wag light, these fixtures contain two alternately flashing yellow lights and are used to help identify runway holding positions to pilots. Pilots, however, have indicated that the light intensity (600 candelas minimum average intensity) and flash rate (average of 35 flashes per minute per lamp) of the L-804s are inadequate. The L-804s were examined under day and night visual flight rules (VFR) and instrument flight rules (IFR) conditions from various distances and angles. Particular attention was paid to performance characteristics such as intensity, flash rate,

vertical and horizontal aiming angle, lamp separation, and the usefulness of providing a hood over each lamp. As a result of the evaluation it was determined that the L-804 specifications needed to be modified. Flash rate should be increased to 45 to 50 flashes per minute per lamp. The light intensity of the Mode 1 (constant current) L-804 when energized at 6.6 amps and tested with one lamp in the steady burning mode and the other lamp masked out should be 4100 candelas. The light intensity of the Mode 2 (constant voltage) L-804 when energized at 120 volts and similarly tested should be 940 candelas.

AN (1) AD-A307 822/XAG

FG (2) 040200

081200

010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Representative Values of Icing-Related Variables Aloft in Freezing Rain and Freezing Drizzle.

DN (9) Technical note

AU (10) Jeck, Richard K.

RD (11) Mar 1996

PG (12) 54 Pages

RS (14) DOT/FAA/AR-TN95/119

RN (18) XH-DOT/FAA/AR

RC (20) Unclassified report

DE (23) *ICE FORMATION, *RAIN, *AVIATION ACCIDENTS

AIRCRAFT, AIRCRAFT MAINTENANCE, AIR FLOW, ATMOSPHERIC

TEMPERATURE,

METEOROLOGICAL DATA, WEATHER FORECASTING, TEMPERATURE

GRADIENTS,

FREEZING, RAINDROPS, FUSELAGES, WIND SHEAR, TAKEOFF, CIVIL AVIATION,

RADIOSONDES, AVIATION SAFETY, SURFACE TEMPERATURE, CLOUD COVER,

AIRCRAFT LANDINGS, HUMIDITY, ICE FORECASTING, ICE PREVENTION

ID (25) *AIRCRAFT ICING, ATMOSPHERIC BOUNDARY LAYER

AB (27) Radiosonde and surface observations in freezing rain (ZR) and freezing drizzle (ZL), and a limited number of aircraft measurements in ZR, have been examined for information on the magnitude and altitude dependence of meteorological variables associated with aircraft icing in these conditions. The variables include temperature aloft, humidity (clouds), and windshear from the radiosondes; surface temperatures, ceiling heights, precipitation type and amount from the surface observations; and temperature, dropsize, rainwater concentration, and icing rate from the instrumented aircraft. These and other data are used here to arrive

at tentative maximum and representative values of these variables. To overcome the inadequacy of median volume diameter (MVD) as a measure of droplet size for these large droplet conditions, a convention for reporting the ZR or ZL water concentration over a few coarse droplet intervals is proposed.

AN (1) AD-A310 139/XAG

FG (2) 010300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) National Simulation Capability (NSC) Program Reduced Vertical Separation Minima (RVSM). Phase 2.

DN (9) Final rept. Sep 94

AU (10) Seeger, Dena

Kopardekar, Parimal

RD (11) Mar 1996

PG (12) 96 Pages

RS (14) DOT/FAA/CT-TN96-6

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *CIVIL AVIATION

TRAINING, TRAFFIC, NEW YORK, PHASE STUDIES, REDUCTION, VERTICAL ORIENTATION, AIR SPACE, DATA STORAGE SYSTEMS, COMMUNICATION AND

RADIO

SYSTEMS, SEPARATION, LABORATORIES, TRANSITIONS, WORKLOAD, FLIGHT SIMULATION, NORTH ATLANTIC OCEAN, QUESTIONNAIRES

ID (25) RVSM (REDUCED VERTICAL SEPARATION MINIMA)

AB (27) The Reduced Vertical Separation Minima (RVSM) experiment resulted from the conclusion reached by the North Atlantic System Planning Group to carry out studies aimed at achieving early implementation of RVSM in the North Atlantic (NAT) Region. RVSM is an approved International Civil Aviation Organization concept to reduce aircraft vertical separation from the Conventional Vertical Separation Minima (CVSM) of 2000 ft to 1000 ft, between flight levels 290 and 410, within a designated portion of the NAT Region. RVSM Phase II studies were conducted in September 1994 at the New York Air Route Traffic Control Center (ARTCC) Dynamic Simulation Laboratory. Phase II investigated workload effects and the feasibility of transitioning aircraft to and from CVSM altitudes and from and to RVSM altitudes within radar sectors R65 and R86 under various traffic conditions. The study was also aimed at determining whether RVSM should be employed exclusively in sector

R65 or in both sectors R65 and R86. RVSM was instrumental in reducing controller workload when a majority of the traffic traveled eastbound. A decrease in workload was not observed while utilizing RVSM for westbound traffic. Post-mn discussions and questionnaires also revealed some concerns over the implementation of RVSM. Frequently reported concerns were: separating RVSM-equipped and non-RVSM-equipped aircraft, difficulty maintaining data block separation during RVSM, and the possibility of aircraft flying into CVSM airspace at an RVSM altitude due to a temporary lack of communication. Simulation results indicated that it is feasible to use domestic oceanic sectors R65 and R86 as RVSM transition airspace'.

23

AN (1) AD-A310 506/XAG

FG (2) 010200

010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Proceedings of International Conference on Cabin Safety Research Held in Atlantic City, New Jersey on November 14-16, 1995.

DN (9) Final rept.

RD (11) Mar 1996

PG (12) 427 Pages

RS (14) DOT/FAA/AR-95/120, TCA-TP-12642

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *AVIATION SAFETY, *AIRCRAFT CABINS

DATA BASES, SYMPOSIA, EMERGENCIES, MANUFACTURING, DYNAMICS, CANADA,

AIRFRAMES, AVIATION ACCIDENTS, INTERNATIONAL, FLIGHT SIMULATORS, MEDICAL SERVICES, HEALTH CARE FACILITIES, TRANSPORT AIRCRAFT, EVACUATION, NEW JERSEY, AIRWORTHINESS, CRASHES, AIRCRAFT TIRES,

FIRE

SAFETY

ID (25) EVACUATION, IN-FLIGHT EMERGENCIES, CRASH DYNAMICS, FIRE SAFETY

AB (27) This publication contains the proceedings of the International Conference on Cabin Safety Research held in Atlantic City, New Jersey, November 14-16, 1995. Presentations were made and break out sessions were held in the following areas: evacuation, in-flight emergencies, crash dynamics and tire safety. Evacuation In-Flight Emergencies Crash Dynamics Fire Safe

AN (1) AD-A310 777/XAG

FG (2) 010200
010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) International Conference on Cabin Safety Research Conference Proceedings.

DN (9) Final rept.

RD (11) Mar 1996

PG (12) 427 Pages

RS (14) AAR-422

RN (18) DOT/FAA/AR-95-120
XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *AVIATION SAFETY, *AIRCRAFT CABINS

SYMPOSIA, EMERGENCIES, DYNAMICS, INTERNATIONAL, EVACUATION, NEW JERSEY, CRASHES, FIRE SAFETY

AB (27) This publication contains the proceedings of the International Conference on Cabin Safety Research held in Atlantic City, New Jersey, November 14-16, 1995. Presentations were made and break out sessions were held in the following areas: evacuation, in-flight emergencies, crash dynamics and fire safety.

23

AN (1) AD-A304 863/XAG

FG (2) 110400
010300
131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) International Aircraft Materials Fire Test Working Group. Material Systems Renovation and Repair Subgroup.

DN (9) Technical note

AU (10) Marker, Timothy

RD (11) Feb 1996

PG (12) 37 Pages

RS (14) DOT/FAA/AR-TN95/83

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *MATERIALS, *FIRES, *FIRE RESISTANT MATERIALS, *AIRCRAFT CABINS TEST AND EVALUATION, UNITED STATES, ENVIRONMENTS, AIRCRAFT INDUSTRY,

COMPOSITE MATERIALS, TEST METHODS, PROBLEM SOLVING, LININGS, SMOKE,

REPAIR, INTERNAL, CARGO, RELEASE, HEAT, CHAMBERS, BURNERS

ID (25) FAA(FEDERAL AVIATION ADMINISTRATION), FEDERAL AVIATION ADMINISTRATION,

BUNSEN BURNER, SEAT FIRE BLOCKING, CARGO LINER TESTS, RENOVATION

AB (27) In an effort to simplify the often complex task of certifying material fire testing methods throughout the aviation/aerospace industry, the International Aircraft Materials Fire Test Working Group was formed.

The scope of the working group encompasses the standardization of FAA certification procedures of all material fire tests as well as the solving of new problems which exist with the current test methods. The working group investigates such tests as the Bunsen burner, the 2-gallon-per-hour seat fire blocking and cargo liner tests, the OSU rate of heat release apparatus, and the NBS smoke chamber. Due to the ever-changing environment in which materials are developed, it is often necessary to make adjustments and refinements to these certification tests to accommodate state-of-the-art materials used in the latest cabin interior systems. There is also a high level of complexity associated with these and other fire tests, and unforeseen problems often arise that need to be addressed to insure that certification tests conducted throughout the United States and foreign countries are performed equally and consistently, according to the intent of the FAR's. jg p6

AN (1) AD-A305 614/XAG

FG (2) 060400
080200
230400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Performance of a Continuous Flow Passenger Oxygen Mask at an Altitude of 40,000 Feet.

DN (9) Final rept.

AU (10) Garner, Robert P.

RD (11) Feb 1996

PG (12) 16 Pages

RS (14) FOT/FAA/AM-96/4

RN (18) XH-XD
RC (20) Unclassified report
DE (23) *OXYGEN, *RESPIRATORY SYSTEM, *HYPOXIA, *BLOOD CIRCULATION,
*OXYGEN
MASKS
TEST AND EVALUATION, SIMULATION, GROUND LEVEL, EXPOSURE(GENERAL),
RATES, SATURATION, FLOW RATE, BASE LINES, PRESSURE, HIGH ALTITUDE,
MALES, FLOW, SUPPLIES, ALTITUDE, SEA LEVEL, PASSENGERS, CHAMBERS,
BLOOD, DESCENT, HYPOBARIC CHAMBERS

ID (25) CONTINUOUS FLOW

AB (27) A redesigned continuous flow passenger oxygen mask was tested for its ability to deliver an adequate supply of oxygen at an altitude of 40,000 feet above sea level. Four male subjects participated in the study. Blood oxygen saturation (SaO2) baseline levels for hypoxic exposure were established for each subject. Immediately prior to high altitude exposure, subjects prebreathed 100% oxygen for two hours through a pressure demand type mask. The hypobaric chamber was then decompressed to a simulated altitude of 35,000 feet. Subjects switched to the passenger oxygen mask. The initial oxygen flow rate to the passenger mask came from manufacturer production performance test data. Once heart and respiratory rates and SaO2 level stabilized, chamber altitude was increased to 40,000 feet. Descent to ground level was performed in steps of 5,000 feet with SaO2 levels being established for each altitude and recommended oxygen flow. Subjects remained at each test altitude for a minimum of three minutes or until SaO2 levels stabilized. At no point during the testing did SaO2 levels approach baseline levels for hypoxic exposure. This mask design would appear to offer protection from hypoxia resulting from altitude exposure up to 40,000 feet.

AN (1) AD-A306 061/XAG

FG (2) 060400
060500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Determination of Effective Thoracic Mass.

DN (9) Final rept.

AU (10) Marcus, Jeffrey H.

RD (11) Feb 1996

PG (12) 33 Pages

RS (14) DOT/FAA/AM-96/7

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *THORAX, *EXPOSURE(PHYSIOLOGY), *SURGERY, *CRASHES
TEST AND EVALUATION, MATHEMATICAL MODELS, IMPACT, DISTRIBUTION,
HUMANS,
PARAMETERS, ACCELERATION, MASS, RESPONSE, SIGNALS,
CARDIOVASCULAR
SYSTEM

ID (25) EFFECTIVE MASS, CRASH DUMMY, HYBRID III, SID, BIOSID, SIDE IMPACT,
THORAX

AB (27) Effective thoracic mass is a critical parameter in specifying mathematical and mechanical models (such as crash dummies) of humans exposed to impact conditions. A method is developed using a numerical optimizer to determine effective thoracic mass (and mass distribution) given a number of acceleration signals and a force signal response. Utilizing previously reported lateral and frontal tests with human cadaveric test specimens in a number of different conditions, the effective thoracic mass is computed. The effective thoracic masses are then computed for a variety of crash dummies exposed to identical test conditions. The force responses generated using the computed effective thoracic masses are compared to the actual measured force responses. The thoracic mass of the crash dummies is then compared to the values for human cadaveric subjects. The distribution of thoracic mass is found to be a function of test condition. The implications in terms of mathematical model development, crash dummy design, and the appropriateness of various types of tests (e.g. pendulum vs. sled) are discussed.

AN (1) AD-A306 206/XAG

FG (2) 010400
120500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Qualification Guidelines for Personal Computer-Based Aviation Training
Devices: Instrument Training.

DN (9) Final rept.

AU (10) Williams, Kevin W.

RD (11) Feb 1996

PG (12) 73 Pages

RS (14) DOT/FAA/AM-96/8

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *FLIGHT TRAINING, *FLIGHT SIMULATORS, *COMPUTER AIDED INSTRUCTION,
*INSTRUMENT FLIGHT
GROUND LEVEL, SPECIFICATIONS, REASONING, QUALIFICATIONS,
INSTRUMENTATION, MICROCOMPUTERS, APPLIED PSYCHOLOGY
ID (25) PCAITD(PERSONAL COMPUTER BASED AVIATION TRAINING DEVICES),
GUIDELINES

AB (27) This is a report of the analytical development of qualification guidelines for personal computer based aviation training devices (PCATDs) for use in instrument flight training. The report includes a task analysis of instrument flight tasks, along with baseline and task-specific guidelines that were developed as a result of the analysis. In addition a PCATD qualification tool is presented in the appendix for use in approving a Part 141 flight school curriculum that incorporates a PCATD for use as a ground training aid. The purpose of this paper is to provide the reader with an understanding of the process and reasoning behind the development of the PCATD qualification guidelines.

AN (1) AD-A307 913/XAG

FG (2) 010600
050900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Dupe Checklist System: Instructor's Guide for Security Supervisor
Initial Training.

DN (9) Final rept.

AU (10) Fobes, J. L.

RD (11) Feb 1996

PG (12) 80 Pages

RN (18) DOT/FAA/AR-95/40

XH-XD

RC (20) Unclassified report

DE (23) *JOB TRAINING, *COMMERCIAL AVIATION, *SUPERVISORS, *INSTRUCTORS,
*SECURITY PERSONNEL, *INSTRUCTION MANUALS

GROUND LEVEL, SCHOOLS, INSTRUCTIONAL MATERIALS, RESOLUTION,
TRAINEES,

AVIATION SAFETY, AIR TRANSPORTATION, PASSENGERS, INTERVIEWING

ID (25) PSA(PASSENGER SERVICE AGENTS), RESOLUTION PROCEDURES TRAINING
PROGRAM

AB (27) The Resolution Procedures Training Program is an integral element of the Dupe Checklist System. The training program currently includes the following documents: (a) Resolution Procedures Manual (RPM); (b)

Instructor's Guide for Security Supervisor Initial Training; (c) Instructor's Guide for Security Supervisor Recurrent Training Guide; (d) Train The Trainer (TTT) Self-Study Resource Material; and (e) Video presentation: Passenger Interview. The documents (except the TTT Self-Study Resource Material) have been designed for classroom training of air carrier Security Supervisors and Passenger Service Agents (PSA). The documents may also be used for training of other air carrier employees, such as skycaps and special services personnel, who provide direct ground services to passengers. Additionally, in accordance with the air carrier's FAA-approved Security Supervisor training program, selected portions of the training material may be provided to trainees (Security Supervisor class participants) for home study. The purpose of the Initial Training Program is to introduce the Security Supervisor to the Dupe Checklist System and its associated resolution procedures. The initial training is designed to provide the Security Supervisor with the background, knowledge and resource material required to perform interviews with passengers who provide Failed Checklist Answers (FCA) and who have not cleared through the initial questioning performed by the Passenger Service Agent (PSA). Portions of this training program will be used for the training of PSAs and, at air carrier discretion, of other personnel.

AN (1) AD-A308 289/XAG

FG (2) 010500
120500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

RESEARCH

TI (6) Operational Assessment for Screener Proficiency Evaluation and
Reporting System (SPEARS) Threat Image Projection.

DN (9) Final rept.

AU (10) Fobes, J. L.

Cormier, S. M.

McAnulty, D. M.

Klock, Brenda A.

RD (11) Feb 1996

PG (12) 177 Pages

RS (14) DOT/FAA/AR-96/27

CT (15) DTFA03-89-C-00043

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TRAINING DEVICES, *COMPUTER AIDED INSTRUCTION

TEST AND EVALUATION, REQUIREMENTS, TRAINING, EXPLOSIVE CHARGES, X RAYS,
HUMAN FACTORS ENGINEERING, SIGNALS, CONFIGURATIONS, THREAT EVALUATION,
INTERNATIONAL AIRPORTS, LOS ANGELES(CALIFORNIA), IMAGE PROJECTORS
ID (25) *SCREENING, SPEARS(SCREENER PROFICIENCY EVALUATION AND REPORTING SYSTEM)

AB (27) This document is the Operational Assessment (QA) of the threat image projection training and testing component of the Screener Proficiency Evaluation and Reporting System (SPEARS) conducted at Los Angeles International Airport in 1995. This OA covers the test and evaluation of the EG&G Astrophysics Training and Testing (TnTTM) system which focused on determining its effectiveness in meeting the requirements set forth in the Critical Operational Issues and Criteria, Critical Technical Issues and Criteria and Test and Evaluation Plan provided by the Federal Aviation Administration. The TnTTM system did not meet 2 of the 3 Critical Operational Criteria and 4 of 7 Critical Technical Criteria during this test and should be considered ineffective and unsuitable in its current configuration.

AN (1) AD-A308 941/XAG

FG (2) 010600
010500
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Aviation Safety Plan.

RD (11) Feb 1996

PG (12) 234 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TRANSPORTATION, *AVIATION SAFETY, *AIR TRANSPORTATION SYMPOSIA, COMMUNITIES, JOB TRAINING, AIRCRAFT MAINTENANCE, AIR TRAFFIC

CONTROL SYSTEMS, WEATHER FORECASTING, AERONAUTICS, SAFETY, RUNWAYS,

WORKSHOPS, LOUISIANA, AIR TRAFFIC CONTROL TERMINAL AREAS
ID (25) PARTNERSHIPS

AB (27) The purpose of this document is to describe the continuing partnership in the aviation community to improve aviation transportation safety. The document begins by providing some background on this effort and a summary of the Aviation Safety Initiative Review held in New Orleans, Louisiana on December 6 and 7, 1995. The ongoing process proposed by

the steering committee for future reviews as well as the next steps required are also described. The core of the document reports on the detailed results of this technical meeting broken out by workshop. These detailed results include: significant accomplishments since the January 1995 meeting; themes, issues, approaches, and initiatives for 1996; significant changes from the 1995 initiatives; identification of the highest priority aviation safety initiatives for 1996; and cross-cutting issues with the other workshops. Two appendices are included. The first provides a list of meeting participants. The second tracks the issues, approaches, and initiatives from the February 1995 Aviation Safety Action Plan to the results of the December 1995 review. This is intended to show the disposition of the 1995 initiatives and how they translated into the 1996 initiatives.

AN (1) AD-A318 103/XAG

FG (2) 010301
200400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Flight Test Investigation of Rotorcraft Wake Vortices in Forward Flight.

DN (9) Final rept.

AU (10) Teager, Stephen A.

Biehl, Keith J.

Garodz, Leo J.

Tymczynszym, Joseph J.

Burnham, David C.

RD (11) Feb 1996

PG (12) 95 Pages

RS (14) DOT/FAA/CT-94/117

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Original contains color plates: All DTIC reproductions will be in black and white.

DE (23) *FLIGHT TESTING, *VORTICES, *HELICOPTERS, *WAKE, *HOVERING MEASUREMENT, PROBES, AIRCRAFT, HAZARDS, TRAILING VORTICES, FLIGHT, STRENGTH(GENERAL), DOPPLER SYSTEMS, LEVEL FLIGHT, DECAY, ROTARY WING

AIRCRAFT, LASER VELOCIMETERS

ID (25) FORWARD FLIGHT

AB (27) This report presents the results of helicopter flight tests and wake vortex measurements which were designed to provide data necessary for the assessment of hazards to following aircraft. The tests described in

this report were conducted using small probe airplanes and a Laser Doppler Velocimeter for wake vortex measurements during forward-flight helicopter operations. Four helicopters, having weights ranging from 7,600 to 70,000 pounds, were used in the tests as the wake vortex generating aircraft. Wake vortex strength and decay characteristics as determined from the flight test results are discussed. In the absence of encounter measurements for the case of hover flight, it is recommended that small airplanes, at the same altitude and downwind of a hovering helicopter, maintain at least 500 feet of separation.

AN (1) AD-A304 263/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 through 1995.

DN (9) Final rept.

AU (10) Collins, William E.
Wayda, Michael E.

RD (11) Jan 1996

PG (12) 79 Pages

RS (14) DOT/FAA/AM-96/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION MEDICINE
REPORTS

ID (25) *RESEARCH REPORTS, OFFICE OF AVIATION MEDICINE

AB (27) An index to Federal Aviation Administration (FAA) Office of Aviation Medicine Reports (1964-1995) and Civil Aeromedical Institute Reports is presented for those engaged in aviation medicine and related activities. The index lists all FAA aviation medicine reports published from 1961 through 1995: chronologically (pp. 1-41), alphabetically by author (pp. 43-50), and alphabetically by subject (pp. 51-72).

AN (1) AD-A304 523/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Test and Evaluation (OT&E) Operational Test Procedures for Type VVI Fixed Ground Antenna Radome (FGAR).

DN (9) Technical note

AU (10) Baker, Leonard H.

Sedgwick, Harold G.

RD (11) Jan 1996

PG (12) 40 Pages

RS (14) DOT/FAA/CT-TN96/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RADOMES, *RADAR ANTENNAS

TEST AND EVALUATION, GROUND LEVEL, AIRCRAFT, VERIFICATION,
ELECTROMAGNETIC PROPERTIES, TEST METHODS, RADAR, AIR TRAFFIC

CONTROL

SYSTEMS, OPERATIONAL EFFECTIVENESS, ELECTROMAGNETIC RADIATION,
ANTENNA

RADIATION PATTERNS, RADAR STATIONS, MISSISSIPPI

ID (25) FGAR(FIXED GROUND ANTENNA RADOMES), ARSR(AIR ROUTE
SURVEILLANCE RADAR),

ATCBS(AIR TRAFFIC CONTROL BEACON SYSTEM)TVRTM(TEST VERIFICATION
REQUIREMENTS TRACEABILITY MATRIX)

AB (27) The objectives of Operational Test and Evaluation (OT&E) testing are to verify the Fixed Ground Antenna Radome (FGAR) does not degrade the electromagnetic performance of the Air Route Surveillance Radar (ARSR)-3 and Air Traffic Control Radar Beacon System (ATCRBS) antenna patterns, and that it meets the other criteria specified in the OT&E Test Plan and the Test and Evaluation (T&E) Master Plan (TEMP) Test Verification Requirements Traceability Matrix (TVRTM). The first Type VVI FGAR will be installed at the Newport, Attala County, Mississippi (MS) ARSR-3 En Route Radar Facility (QNM) and is considered a First Article. The OT&E Operational testing will be limited to electromagnetic performance testing using 'live' primary (ARSR-3) and secondary (beacon) aircraft (targets of opportunity) radar data. These data will be collected and analyzed by the Memphis (ZME) and Houston (ZHU) Air Route Traffic Control Centers (ARTCC). (The Houston ARTCC (ZHU) is not presently receiving data from the Newport ARSR-3 En Route Radar Facility (QNM).

AN (1) AD-A304 647/XAG

FG (2) 010300

110400

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Fire Response of Geopolymer Structural Composites.

DN (9) Technical note

AU (10) Lyon, Richard E.
RD (11) Jan 1996
PG (12) 15 Pages
RS (14) DOT/FAA/AR-TN95/22
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIRCRAFT, *FIBER REINFORCED COMPOSITES, *CARBON REINFORCED COMPOSITES,
*FLAMMABILITY, *FIRE RESISTANT MATERIALS
POLYMERS, COMPOSITE MATERIALS, LAMINATES, COMPOSITE STRUCTURES,
CARBON
FIBERS, MATRIX MATERIALS, CONCRETE, STRENGTH(MECHANICS), STEEL,
CERAMIC
MATERIALS, ALUMINUM, FLEXURAL STRENGTH, BARRIERS, THERMOPLASTIC
RESINS,
IGNITION, ESTERS, HEAT FLUX, CYANATES, POLYESTER PLASTICS,
CALORIMETERS, FIRE HAZARDS
AB (27) The fire response of a potassium aluminosilicate matrix (geopolymer) carbon fiber composite was measured and the results compared to organic matrix composites being used for infrastructure and transportation applications. At irradiance levels of 50 kW/sq m, typical of the heat flux in a well developed fire, glass- or carbon-reinforced polyester, vinylester, epoxy, bismaleimide, cyanate ester, polyimide, phenolic, and engineering thermoplastic laminates ignited readily and released appreciable heat and smoke, while carbon-fiber reinforced geopolymer composites did not ignite, burn, or release any smoke even after extended heat flux exposure. The geopolymer matrix carbon fiber composite retains sixty-three percent of its original 245 MPa flexural strength after a simulated large fire exposure. (MM)

AN (1) AD-A307 207/XAG

**FG (2) 010600
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Aviation System Capital Investment Plan.

RD (11) Jan 1996
PG (12) 280 Pages
RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *CIVIL AVIATION

REQUIREMENTS, LOGISTICS SUPPORT, AUTOMATION, MANAGEMENT
INFORMATION

SYSTEMS, MANAGEMENT PLANNING AND CONTROL, INVESTMENTS, DATA
MANAGEMENT,
COST EFFECTIVENESS, ECONOMIC IMPACT, LOCAL AREA NETWORKS,
INDUSTRIAL
MODERNIZATION, DOPPLER RADAR, DIRECTION FINDING, METEOROLOGICAL
RADAR,
AIRPORT CONTROL TOWERS, GROUND CONTROLLED APPROACH RADAR,
AIRPORT RADAR
SYSTEMS, GLOBAL POSITIONING SYSTEM, AIR SPACE, SATELLITE
COMMUNICATIONS, LANDING AIDS, SYSTEMS ANALYSIS,
TELECOMMUNICATIONS,
AVIATION SAFETY, AIRPORTS, TACAN, SEARCH RADAR, ALL WEATHER
AVIATION,
SYSTEM SAFETY, VOICE COMMUNICATIONS, INSTRUMENT LANDINGS, LORAN,
RADIO
TOWERS

AN (1) AD-B212 348/XAG

**FG (2) 170800
200500**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

RESEARCH

**TI (6) Nuclear Quadrupole Resonance (NQR) Explosives Detection Device (EDD)
demonstration Test Report.**

DN (9) Test rept.

AU (10) Krauss, R. A.

Buess, M. L.

Garroway, A. N.

Yesinowski, J. P.

Miller, J. B.

RD (11) Jan 1996

PG (12) 39 Pages

RS (14) AAR-520

CT (15) DTFA03-83-A-00322

RN (18) DOT/FAA/AR-96-11
XB-XH

RC (20) Unclassified report

AL (22) Distribution authorized to U.S. Gov't. agencies only; Test Evaluation;
19 Jul 96. Other requests shall be referred to Naval Research Lab.,
Washington, DC 20375-5342.

DE (23) *EXPLOSIVES DETECTION, *NUCLEAR QUADRUPOLE RESONANCE
DEMONSTRATIONS, SECURITY, AVIATION SAFETY

DL (33) 03

AN (1) AD-A310 264/XAG

FG (2) 010300

050100

150500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Federal Aviation Administration Annual Report '95.

RD (11) 1996

PG (12) 149 Pages

RN (18) XH-XG

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *AIRCRAFT INDUSTRY, *FINANCIAL MANAGEMENT, *AVIATION SAFETY
COMMERCIAL AIRCRAFT, REPORTS, AIR TRAFFIC CONTROL SYSTEMS,

MISSIONS,

CIVIL AVIATION, AIRPORTS, INDICATORS, PASSENGERS, ACCOUNTABILITY

AB (27) Partial contents: Mission Performance Indicators, FY 1995 Financial
Highlights, Supplemental Program Information, and Financial Statement.

23

AN (1) AD-A327 839/XAG

FG (2) 010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Criminal Acts Against Civil Aviation.

RD (11) 1996

PG (12) 90 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *CRIMES

GLOBAL, RECORDS, BOMBING, GENERAL AVIATION AIRCRAFT, AIRCRAFT
HIJACKING

ID (25) FAA(FEDERAL AVIATION ADMINISTRATION)

AB (27) The FAA maintains records of aircraft hijackings, bombing attacks, and
other significant criminal acts against civil and general aviation
interests worldwide, which are used to compile this report. Offenses
such as these represent serious threats to aviation safety and, in
those incidents involving U.S. air carriers or facilities outside the
United States, are often intended as symbolic attacks against the
United States.

AN (1) AD-A302 648/XAG

FG (2) 060500

010600

240700

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL

INST

TI (6) An Economical Alternative for the Secondary Container Used for
Transporting Infectious Disease Substances.

DN (9) Final rept.

AU (10) Mandella, Joseph G., Jr.

Garner, Robert P.

RD (11) Dec 1995

PG (12) 8 Pages

RN (18) DOT/FAA/AM-95/29

XH-XD

RC (20) Unclassified report

DE (23) *CONTAINMENT(GENERAL), *CONTAINERS, *INFECTIOUS DISEASES, *AIR
TRANSPORTATION

SIMULATION, THICKNESS, HAZARDS, EXPOSURE(GENERAL), BIOLOGY,
MATERIALS,

SECONDARY, RESIDUALS, SAFETY, PACKAGING, INTERNATIONAL, ALTITUDE,
COMPOSITION(PROPERTY), POLYETHYLENE, BAGS

ID (25) MEDICAL SPECIMENS, TRANSPORT, INFECTIOUS SUBSTANCES, IATA, ICAO,
FLIGHT

INSPECTION, WORKSTATION DESIGN, ANTHROPOMETRY

AB (27) The safe containment of biological specimens during air transport is of
growing concern as the number of shipments and hazards associated with
such material increases. The purpose of this study was to examine the
durability of adhesive-closure polyethylene (PE) bags upon exposure to
altitude. The tests consisted of two phases. The objective of the first
phase was to identify the most appropriate combination of bag
composition, thickness, and size. The second phase was to determine the
most appropriate packing techniques to be used with the bag best suited
for air transport. Both phases consisted of a hypobaric chamber being
taken to a simulated altitude of 45,000 feet. The PE bags contained
specimens packaged in International Air Transportation Association
approved containers. Initial tests indicated that differences in
material composition and thickness did not significantly alter the
ability of the PE bags to withstand the pressure differential. The
second test phase suggested that the most effective means of preventing
bag rupture upon exposure to altitude was to use oversized bags,
evacuated of any residual air as completely as possible.

AN (1) AD-A302 651/XAG

FG (2) 010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL

INST

TI (6) An Experimental Abdominal Pressure Measurement Device for Child ATDs.

DN (9) Final rept.

AU (10) DeWeese, Richard L.

RD (11) Dec 1995

PG (12) 11 Pages

RN (18) DOT/FAA/AM-95/30

XH-XD

RC (20) Unclassified report

DE (23) *IMPACT TESTS, *TEST EQUIPMENT, *TRANSPORT AIRCRAFT, *CHILDREN,
*DYNAMIC TESTS, *CRASHWORTHINESS

TEST AND EVALUATION, VELOCITY, MEASUREMENT, INTERACTIONS,
PRESSURE

MEASUREMENT, PRESSURE, RESTRAINT, BOOSTER ROCKET ENGINES,
PASSENGERS,

ABDOMEN, ANTHROPOMETRY, SEATS, TEST CONSTRUCTION(PSYCHOLOGY)

ID (25) ABDOMINAL PRESSURE, CHILD RESTRAINTS, AIRPLANE PASSENGER SEATS,
ATD(ANTHROPOMORHIC TEST DUMMY)

AB (27) An experimental device to measure the abdominal pressure in child-size
Anthropomorphic Test Dummies (ATDs) during dynamic tests was developed.

A description is provided of the two ATDs in which the device was
installed, the CRABI six-month-old and the CAMIX two-year-old size ATD.

The test device's construction and installation in the ATDs is
described. The instrumented ATDs were used to evaluate the performance
of child restraint devices when installed in a typical transport
aircraft passenger seat. The restraints evaluated were booster seats,
normal lap belts, and a lap-held child restraint called the "belly
belt." The test severity was 16 Gpk. with an impact velocity of 44
ft/sec. Descriptions of the test setups are provided. Analyses are
presented of the pressure measurements acquired from the tests and the
ATD/restraint system interactions that produced them.

AN (1) AD-A302 810/XAG

FG (2) 050800

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Some Effects of 8- vs. 10-Hour Work Schedules on the Test
Performance/Alertness of Air Traffic Control Specialists.

DN (9) Final rept.

AU (10) Schroeder, David J.

Rosa, Roger R.

Witt, L. A.

Banks, Barnett

RD (11) Dec 1995

PG (12) 20 Pages

RS (14) DOT/FAA/AM-95/32

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *SCHEDULING, *ATTENTION, *SLEEP,
*FATIGUE(PHYSIOLOGY), *EMOTIONS

TEST AND EVALUATION, SENSITIVITY, SHIFTING, PATTERNS, NIGHT, ROTATION,
AIR TRAFFIC CONTROLLERS, DIURNAL VARIATIONS, FATIGUE

TESTS(MECHANICS)

AB (27) A 10-hour, 4-day rotating shift schedule worked by some Air Traffic
Control Specialists (ATCSs) was compared to the more traditional
8-hour, 2-2-1 rapidly rotating schedule. Measures of performance and
alertness were obtained from a group of 52 ATCSs at an en route ATC
center on tasks in the NIOSH fatigue test battery. Additional
information on sleep patterns, mood, and somatic complaints was also
gathered. Results confirm that tests comprising the NIOSH test battery
are sensitive to fatigue and diurnal variations associated with a
rotating shift schedule. Test performance of ATCSs on the 10-hour shift
did not differ from those on the 8-hour schedule for any of the NIOSH
parameters, when comparing the initial 4 days of the work week. Test
performance was notably poorer on the mid-shift (night) that occurred
on the final (fifth) day of the 2-2-1 8-hour schedule. For both
schedules, there was evidence of changes in alertness on some of the
NIOSH performance measures within work days and across days of the
week. Changes in test performance and mood ratings corresponded to the
decline in self-reported sleep time across the work week.

AN (1) AD-A303 697/XAG

FG (2) 040200

170900

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Terminal Doppler Weather Radar (TDWR) Operational Test and Evaluation (OT&E) Integration and OT&E Operational Final Report.

DN (9) Final rept.

AU (10) Martinez, Radame

Lee, Tai

Guthlein, Peter

Viveiros, Steve

Wedge, Donne

RD (11) Dec 1995

PG (12) 81 Pages

RS (14) DOT/FAA/CT-TN95/63

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DOPPLER RADAR, *METEOROLOGICAL RADAR, *WEATHER FORECASTING, *TERMINAL

FLIGHT FACILITIES

TEST AND EVALUATION, TEST EQUIPMENT, OPERATIONAL EFFECTIVENESS,

ADVERSE

CONDITIONS, GUSTS, WIND SHEAR, DATA ACQUISITION, C BAND, PENCIL

BEAMS

ID (25) TDWR(TERMINAL DOPPLER WEATHER RADAR), LLWAS(LOW LEVEL WIND SHEAR ALERT

SYSTEM), MICROBURST, GUST FRONTS

AB (27) This document is the Final Report for Operational Test and Evaluation (OT&E) Integration and OT&E Operational testing of the Terminal Doppler Weather Radar (TDWR). It provides a complete account of the results of OT&E testing as well as recommendations for future considerations. This report contains a description of testing and evaluation activities including location, participants, specialized test equipment used during testing, test objectives/criteria, test descriptions, test results, and methods used for data collection and analysis. This report also contains a comprehensive discussion of overall test results. Finally, the report ends with test conclusions and recommendations to improve system performance.

AN (1) AD-A303 707/XAG

FG (2) 010600

170800

200800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Test and Evaluation Plan for Screener Proficiency Evaluation and Reporting System (SPEARS) Threat Image Projection.

DN (9) Draft rept.

AU (10) Fobes, J. L.

McAnulty, D. M.

RD (11) Dec 1995

PG (12) 187 Pages

RS (14) DOT/FAA/AR-95/50

CT (15) DTFA03-89-C-00043

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *THREAT EVALUATION, *INSPECTION, *AIRPORTS, *SECURITY PERSONNEL, *PASSENGERS

REQUIREMENTS, TRAINING, X RAYS, OPERATIONAL EFFECTIVENESS, HUMAN

FACTORS ENGINEERING, INTERNATIONAL AIRPORTS, LOS

ANGELES(CALIFORNIA),

IMAGE PROJECTORS

ID (25) TEP(TEST AND EVALUATION PLAN), SPEARS(SCREENER PROFICIENCY

EVALUATION

AND REPORTING SYSTEM), FICTIONAL IMAGE PROJECTION

AB (27) This document is the Test and Evaluation Plan (TEP) to evaluate the effectiveness of the threat image projection training and testing component of the Screener Proficiency Evaluation and Reporting System (SPEARS). This TEP is for the test and evaluation of the EG&G Astrophysics Linescan Training and Testing System and will focus on determining its effectiveness in meeting the requirements set forth in the Critical Operational Issues and Criteria and Critical Technical Issues and Criteria provided by the Federal Aviation Administration. The test and evaluation will be conducted at the Los Angeles International Airport. The results will be analyzed and become part of a later document.

AN (1) AD-A303 791/XAG

FG (2) 010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Dupe Checklist System. Resolution Procedures Manual.

DN (9) Final rept.

AU (10) Fobes, J. L.
RD (11) Dec 1995
PG (12) 29 Pages
RS (14) DOT/FAA/AR-95/39
CT (15) DTFA03-93-C-00042
RN (18) XH-XD
RC (20) Unclassified report
NO (21) Prepared in cooperation with DCS, Inc., Egg Harbor Twp, NJ.
DE (23) *INTERROGATION, *AVIATION SAFETY, *HANDBOOKS, *SECURITY PERSONNEL,
*PASSENGERS, *DECEPTION
TRAINING, RESOLUTION, DIAMONDS, TERMINAL FLIGHT FACILITIES,
TRANSPORT,
GUIDANCE, AREA SECURITY, DRUGS, GOLD, PASSENGER AIRCRAFT, BOMBS,
TERRORISM, INSTRUCTION MANUALS, BAGS
ID (25) *AVIATION SECURITY, DCS(DUPE CHECKLIST PROGRAM), RPM(RESOLUTION PROCEDURES MANUAL), FCA(FAILED CHECKLIST ANSWERS), AVSEC(AVIATION SECURITY)
AB (27) The Resolution Procedures Manual is one of five security reference handbooks providing background information, guidelines and procedures regarding passenger questioning and resolutions in conjunction with the Dupe Checklist (DCS) Program. It is intended to be used for operational guidance and/or training activities. A passenger may be duped into carrying a bomb on board an aircraft under the following circumstances:
(1) A bomb is placed in an unsuspecting passenger's unattended baggage;
(2) An unsuspecting passenger is given a bag to transport on his/her flight. A bomb is concealed inside the bag; (3) An unsuspecting passenger is given an item or a package to transport on his/her flight. The item/package contains a bomb; (4) An unsuspecting passenger is given a 'gift' just prior to the flight. The gift contains a bomb; (5) A passenger may believe that he/she is involved in some type of illegal activity. Such a passenger may believe that his/her bag contains contraband (e.g. drugs, gold, cash, or diamonds). The passenger is not aware of the true contents of his/her bag (a bomb); (6) A passenger who is a terrorist, or a terrorist group sympathizer, may believe he/she is transferring confidential material or an explosive to his/her destination. In reality the passenger is carrying a bomb setup to go off on his/her flight.

AN (1) AD-A303 798/XAG
FG (2) 010200
131200
190100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) FAA K-9 Program Quality Control Aid Test and Evaluation Plan.

DN (9) Final rept.
AU (10) Cormier, Stephen
Fobes, J. L.
Hallowell, Susan F.
Barrientos, J. M.
Fischer, Douglas S.
RD (11) Dec 1995
PG (12) 62 Pages
CT (15) DTFA03-92-C-00035
RN (18) DOT/FAA/AR-95/124
XH-XD
RC (20) Unclassified report
NO (21) Prepared in cooperation with Galaxy Scientific Corp.
DE (23) *TEAMS(PERSONNEL), *TERRORISM, *EXPLOSIVES DETECTION, *MILITARY DOGS

TEST AND EVALUATION, TERRORISTS, OPTIMIZATION, COMMERCIAL AIRCRAFT,
SECURITY, OPERATIONAL EFFECTIVENESS, EXPLOSIVES, PURITY,
SOLUTIONS(GENERAL), SIGNALS, CONFIGURATIONS, FABRICS, QUALITY CONTROL,
MILITARY TRAINING, TNT, FIELD CONDITIONS, BAGS, SABOTAGE, AIRCRAFT HIJACKING, SMELL

AB (27) This document is a Test and Evaluation Plan for an operational test and evaluation of quality control aids (QCAs) for training and testing of the FAA sponsored K-9 teams. Actual explosives and QCAs will be operationally tested for three types of explosives: double-based smokeless powder, TNT, and C4. The three configurations of each QCA include a cloth patch treated with a pure solution, a cloth pouch treated with a granular composite mixture, and a non-hazardous explosive for security training and testing (NESTT) material. This total of nine QCAs will be evaluated to determine the optimal configuration for the QCAs. The results of the OT&E will be used to select leading candidate QCAs for further evaluation under field operational conditions.

AN (1) AD-A303 805/XAG
FG (2) 130400
010300
131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Performance of Improved Aerosol Cans Subjected to an Aircraft Fire.

DN (9) Technical rept.

AU (10) Hawthorne, Christopher
Blake, David

RD (11) Dec 1995

PG (12) 13 Pages

RN (18) DOT/FAA/AR-TN95/78
XH-XD

RC (20) Unclassified report

DE (23) *AEROSOLS, *CONTAINERS, *AIRCRAFT FIRES
SCENARIOS, PERFORMANCE(ENGINEERING), FIRE HAZARDS

ID (25) SBIR

AB (27) This study was undertaken following the completion of a Small Business Innovation Research (SBIR) Phase 2 contract involving the fire hazards of aerosol cans. Tests were conducted on a newly designed aerosol can developed during the SBIR Phase 2 contract as well as two types of currently produced cans. The purpose was to compare the hazards associated with typical aerosol cans versus the newly designed can when they are involved in an aircraft fire. The testing determined that the new can created the least hazard when involved in aircraft fire scenarios. jg p3

AN (1) AD-A303 844/XAG

FG (2) 010500

050600

060300

190100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Systems Analysis of the Federal Aviation Administration's K-9 Program.

DN (9) Final rept.

AU (10) Cormier, Stephen

Fobes, J. L .

Hallowell, Susan F.

Barrientos, J. M.

Fischer, Douglas S.

RD (11) Dec 1995

PG (12) 51 Pages

RS (14) DOT/FAA/AR-95/123

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TRAINING, *SYSTEMS ANALYSIS, *AVIATION SAFETY, *DOGS, *EXPLOSIVES
DETECTION, *SMELL

MOBILITY, UNITED STATES GOVERNMENT, THREATS, TEACHING METHODS,
TEAMS(PERSONNEL), PROBLEM SOLVING, MOBILE, COVERT OPERATIONS,

BONDING,

MAINTENANCE MANAGEMENT, BEHAVIOR, PROFICIENCY, AIRPORTS,

SELECTION, LAW

ENFORCEMENT, CONFIDENCE LEVEL, SENSES(PHYSIOLOGY), ODORS

ID (25) K-9 PROGRAM, AOA(AIRCRAFT OPERATIONS AREA)

AB (27) The Federal Aviation Administration's (FAA) K-9 Program has been a formal program within the FAA for over 23 years. The local law enforcement uses FAA sponsored K-9 teams to search the aircraft operations area (AOA) at U. S. airports for clandestine explosives if a threat has been indicated. K-9 explosive detection teams are the only mobile detection system currently employed by the FAA for the detection of explosives within the AOA. The FAA has sponsored an initiative to improve effective training techniques for the dogs, handlers, and K-9 teams. The FAA K-9 Program is a complex system consisting of three subsystems: initial training, operational training, and annual certifications. The analysis required that each subsystem be observed, potential problems identified, and solutions recommended to strengthen the program.

AN (1) AD-A304 521/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Test and Evaluation (OT&E) Operational Test Plan for Type V/VI Fixed Ground Antenna Radome (FGAR).

DN (9) Technical note

AU (10) Baker, Leonard H.
Sedgwick, Harold G.

RD (11) Dec 1995

PG (12) 41 Pages

RS (14) DOT/FAA/CT-TN95/69

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RADOMES, *RADAR ANTENNAS

TEST AND EVALUATION, REQUIREMENTS, GROUND LEVEL, SPECIFICATIONS,

AIR

TRAFFIC CONTROL SYSTEMS, OPERATIONAL EFFECTIVENESS, PLANNING,

RADAR

STATIONS, SEARCH RADAR, PHASED ARRAYS, RADAR BEACONS, MISSISSIPPI ID (25) FGAR(FIXED GROUND ANTENNA RADOME), SURVEILLANCE RADAR, BOS(BEACON ONLY

SUITES), MODE S, ARSR(AIR ROUTE SURVEILLANCE RADAR) AB (27) The Federal Aviation Administration (FAA) Operational Test and Evaluation (OT&E) Operational Test Plan for Type V/VI Fixed Ground Antenna Radome (FGAR) is prepared by the Associate Program Manager for Test (APMT). It defines the overall planning, test activities, and coordination associated with OT&E Operational testing required to ensure the project meets the requirements of the specification, and the system and subsystem requirements allocated to the project. The purpose of the FGAR project is to provide new, larger radomes for en route surveillance radars and for Beacon Only Sites (BOS) that require Mode Select Beacon System (Mode S) installations. The FGARs will provide an environmental enclosure for a variety of single or dual-faced monopulse beacon phased array and en route surveillance radar antennas. The Type V/VI FGAR is specially designed to be mounted on an Air Route Surveillance Radar (ARSR)-3 antenna tower. The first Type VIVI FGAR will be installed at the Newport, Attala County, Mississippi (MS) ARSR-3 En Route Radar Facility.

AN (1) AD-A305 193/XAG

FG (2) 010200
010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Approach Station Keeping (ASK) Experiment Plan and Final Report.

DN (9) Technical rept. Jul-Aug 95

AU (10) Nouragas, Paula
Seeger, Dena
Kopardekar, Parimal
Stahl, David

RD (11) Dec 1995

PG (12) 66 Pages

RS (14) DOT/FAA/CT-TN95/58

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *GROUND SPEED, *AIRSPEED INDICATORS,

*STATIONKEEPING

POSITION(LOCATION), TEST BEDS, AIRCRAFT, FLIGHT CONTROL SYSTEMS, COCKPITS, FLIGHT CREWS, DYNAMICS, PILOTS, WIND, DISPLAY SYSTEMS, AIR NAVIGATION, FLIGHT, PLANNING, WIND SHEAR, STANDARDS, DATA STORAGE SYSTEMS, SEPARATION, LOSSES, FLIGHT SIMULATORS, AUTOMATIC PILOTS,

LANDING

ID (25) *TRAILING AIRCRAFT, IAS(INDICATED AIR SPEED), ASK(APPROACH STATION KEEPING), RCS(RECONFIGURABLE COCKPIT SIMULATOR), GAT(GENERAL AVIATION

TRAINER)

AB (27) The Approach Station Keeping (ASK) study was conducted at the request of the Federal Aviation Administration's (FAA's) Flight Standards Organization (AFS-400) to investigate an issue raised by RTCA Special Committee - 186 concerning implementation of the proposed Automatic Dependent Surveillance-Broadcast (ADS-B) system. The primary study objective was to investigate whether both Indicated Air Speed (IAS) and Ground Speed (GS) of a leading aircraft were required by the flight crew of a trailing aircraft to maintain separation. The secondary study objective was to investigate whether provision of IAS information of a leading aircraft would enable the flight crew of a trailing aircraft to detect the presence of wind shear. The test bed consisted of the FAA's Reconfigurable Cockpit Simulator (RCS) and General Aviation Trainer (GAT) located at the FAA Technical Center in Atlantic City, NJ. The RCS was configured as a Boeing 747-400 aircraft and flown as the trailing aircraft. The GAT was flown as the leading aircraft at approach and landing speeds corresponding to a Beechcraft Super King Air (BE-20). The dynamic position of the leading aircraft, a data block containing call sign, type aircraft, and GS or GS and IAS of the leading aircraft, and a 3-mile range ring were incorporated in the Navigation Display of the trailing aircraft. Five flight crews conducted 24 approaches each. The wind condition, starting position, configuration and speed, airspeed option, and control mode (autopilot or manual) were varied for each approach. Analysis of subjective and objective data indicated that IAS did not appear to provide an advantage for maintaining instantaneous separation.

AN (1) AD-A302 527/XAG

FG (2) 060500
050800
061100

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Drugs and Alcohol Found in Fatal Civil Aviation Accidents Between 1989 and 1993.

DN (9) Final rept.

AU (10) Canfield, Dennis
Flemig, Jo

Hordinsky, Jerry
Birky, Merritt
RD (11) Nov 1995
PG (12) 9 Pages
RS (14) DOT/FAA/AM-95/28
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *PERFORMANCE(HUMAN), *AVIATION ACCIDENTS, *TOXICOLOGY,
*ALCOHOLS,
*ALCOHOLISM, *DRUG ABUSE, *DRUG ADDICTION
TEST AND EVALUATION, DATA BASES, TRANSPORTATION, AIRCRAFT, PILOTS,
REPORTS, RESEARCH FACILITIES, SAFETY, CONTAINERS, CIVIL AVIATION,
LABORATORIES, CYANIDES, CARBON MONOXIDE, LIVER, DRUGS, BLOOD,
URINE,
AUTOPSY, LITIGATION, PATHOLOGISTS
ID (25) CAMI(CIVIL AEROMEDICAL INSTITUTE)
AB (27) The FAA Office of Aviation Medicine's Civil Aeromedical Institute
(CAMI) is tasked under public law 100-591 (H.R. 4686); November 3,
1988, Aviation Safety Research Act of 1988 to conduct toxicology tests
on aviation accidents and determine the effects of drugs on human
performance. It is important for the FAA to identify the extent to
which drugs and alcohol are being used by pilots involved in aviation
accidents so that the FAA can take steps to prevent pilots from using
drugs or alcohol, which could impair their ability to fly an aircraft.
The toxicology reports prepared by the CAMI Forensic Toxicology
Research Section are used by the FAA and the National Transportation
Safety Board to determine the cause of aviation accidents and evaluate
present FAA regulations. Methods: Specimens (blood, urine, liver,
kidney, vitreous, and other bodily specimens) were collected by
pathologists near the accident and placed in evidence containers
provided by CAMI. These samples were refrigerated and shipped by
overnight air. Upon receipt, the specimens were inventoried and
accessioned for the analysis of drugs, alcohol, carbon monoxide, and
cyanide. All data collected by the laboratory were electronically
entered into a computer for future analysis. The data base was searched
using a program developed by the Forensic Toxicology Research Section.
The data base was sorted based on the class of drug, controlled
dangerous substance schedules I and II, controlled dangerous substance
schedules III-V, prescription drugs, over-the-counter drugs, and
alcohol. Results: The Toxicology and Accident Research Laboratory
received specimens from 1845 pilots for postmortem toxicology analysis
between 1989 to 1993.

AN (1) AD-A303 702/XAG
FG (2) 040200
120700
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Integrated Terminal Weather System (ITWS) 1994 Demonstration Phase OT&E
final Report.
DN (9) Final rept
AU (10) Weiss, Thomas M.
Yastrop, Gloria
Smythe, Glenn
RD (11) Nov 1995
PG (12) 110 Pages
RS (14) DOT/FAA/CT-TN95/52
RN (18) XH-XD
RC (20) Unclassified report
AL (22) Availability: Document partially illegible.
DE (23) *INFORMATION SYSTEMS, *METEOROLOGICAL DATA, *WEATHER
FORECASTING,
*TERMINAL FLIGHT FACILITIES, *AIR TRAFFIC CONTROLLERS
INTEGRATED SYSTEMS, DETECTORS, AIRCRAFT, MANAGEMENT, WEATHER,
PREDICTIONS, VALIDATION, DEMONSTRATIONS, WIND, AERONAUTICS,
PRECIPITATION, LIGHTNING, PLANNING, AIR SPACE, ADVERSE CONDITIONS,
GUSTS, INFLIGHT, WIND SHEAR, METEOROLOGY, SUPERVISORS,
INTERNATIONAL
AIRPORTS, WORKLOAD, RUNWAYS, AIR TRAFFIC, QUESTIONNAIRES, AVIATION
PERSONNEL, FRONTS(METEOROLOGY)
ID (25) ITWS(INTEGRATED TERMINAL WEATHER SYSTEM),
DEMVAl(DEMONSTRATION
VALIDATION), NWS(NATIONAL WEATHER SERVICE)
AB (27) The Integrated Terminal Weather System (ITWS) will produce a fully
automated, integrated terminal weather information system to improve
safety, efficiency, and capacity of terminal area aviation operations.
The ITWS will acquire data from Federal Aviation Administration (FAA)
and National Weather Service (NWS) weather sensors as well as aircraft
in flight to provide FAA air traffic personnel with products that
require no meteorological interpretation. These products include
current terminal area weather and near-term predictions of significant
weather phenomena (e.g., microbursts, wind shear, gust fronts,
precipitation, lightning, terminal winds, etc.). A
Demonstration/Validation (DEMVAl) of ITWS prototypes was conducted at
Memphis and Orlando International Airports (MEM) (MCO) and the Memphis
and Jacksonville Air Route Traffic Control Centers (ARTCC) during the
summer of 1994. ITWS products were evaluated for operational

suitability, usefulness, and meteorological validity. Questionnaires were completed by air traffic controllers, supervisors, and traffic managers at the completion of the DEMVAL. This report summarizes the results of the meteorological data analysis and questionnaire results, as determined by ACT-320. The resolution of Critical Operational Issues (COI) are also discussed. The results of these analyses indicated that during the DEMVAL: (1) The ITWS products (a) were useful during operationally significant weather, (b) were displayed without the need for meteorological interpretation, and (c) enhanced supervisor effectiveness in traffic planning/management during adverse weather; (2) Terminal airspace and runways were utilized more efficiently when the ITWS was operational; and (3) The ITWS reduced perceived controller workload during adverse weather conditions in the terminal area.

23

AN (1) AD-A305 547/XAG

**FG (2) 050900
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) The Influence of Generic Airspace on Air Traffic Controller
Performance.**

DN (9) Technical note, Jul 94-Feb 95

**AU (10) Guttman, J. A.
Stein, Earl
Gromelski, S.**

RD (11) Nov 1995

PG (12) 80 Pages

RS (14) DOT/FAA/CT-TN95/38

RN (18) XH-XD

RC (20) Unclassified report

**DE (23) *PERFORMANCE(HUMAN), *AIR TRAFFIC CONTROLLERS
SIMULATORS, SCENARIOS, CONTROL, VOLUME, UNITED STATES,
ENVIRONMENTS,**

**AIRCRAFT, INFORMATION EXCHANGE, TRAINING, PERFORMANCE TESTS,
COMMUNICATION EQUIPMENT, AIR TRAFFIC CONTROL SYSTEMS,
OPERATIONAL**

**EFFECTIVENESS, BOUNDARIES, AIR SPACE, ARTIFICIAL SATELLITES, ROUTING,
RATINGS, MAN MACHINE SYSTEMS, PERSONNEL SELECTION, WORKLOAD,**

**ARRIVAL,
AIRPORTS, AIR TRAFFIC, QUESTIONNAIRES, JOB ANALYSIS, NEW JERSEY,
VOICE**

COMMUNICATIONS, URBAN AREAS, CONTROL SIMULATORS

**ID (25) SECTOR, GENERIC SECTOR, CONTROLLER PERFORMANCE, HOME SECTOR,
ATWIT(AIR
TRAFFIC WORKLOAD INPUT TECHNIQUE), SACHA(SEPARATION AND CONTROL
HIRING
ASSESSMENT)**

AB (27) The generic sector evaluated in this study was based on a four-corner post operation typically used in many terminal areas in the United States. Arrival aircraft originated from one of four arrival fixes just outside the sector boundaries. These arrival routes can be thought of as spokes of a wheel with the main airport site as the hub. In addition to the main airport, there were three satellite airports that were under radar control. Departure aircraft from the main and satellite airports were sent directly to one of four departure fixes located outside the sector boundaries. Eleven air traffic controllers from the Atlantic City TRACON participated in the study. The experiment was conducted at the Federal Aviation Administration Technical Center's Human Factors laboratory at the Atlantic City International Airport, New Jersey. The experimental apparatus consisted of a high fidelity air traffic control simulator with voice communication equipment to allow controllers to issue commands to remote simulation pilots. The results showed significantly lower Air Traffic Workload Input Technique (ATWIT) ratings by the last generic run compared to the first generic run on the first-day training runs. Time under control and the distance flown by the aircraft significantly decreased by the last training run. Controller ratings of workload and stress were also significantly lower by the last generic run. In addition, post-scenario questionnaire ratings for ability to plan, exchange information, and prioritize were significantly higher by the last run. Correlations between scores on the generic sector and the Atlantic City sector were significant for the over-the-shoulder ratings, ATWIT ratings, and post-scenario questionnaire ratings. Final questionnaire comments indicated that the participants thought the generic sector was representative of a typical terminal environment.

AN (1) AD-A300 583/XAG

**FG (2) 010200
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE**

TI (6) Airman Research Questionnaire. Methodology and Overall Results.

DN (9) Final rept.

AU (10) Hunter, David R.

RD (11) Oct 1995
PG (12) 66 Pages
RS (14) DOT/FAA/AM-95/27
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *FLIGHT TRAINING, *AVIATION SAFETY, *AVIATION PERSONNEL
ATTITUDES(PSYCHOLOGY), PILOTS, COMMERCIAL AVIATION, AERONAUTICS,
CONSTRUCTION, SURVEYS, SAFETY, QUALIFICATIONS, DATA ACQUISITION, AIR
TRANSPORTATION, QUESTIONNAIRES, STANDARD DEVIATION, INDEX TERMS
AB (27) A nationwide survey of 19,657 pilots was performed to collect
information on their aviation qualifications and experiences, their
participation in training activities, their involvement in critical
aviation incidents, their personal minimums and usual practices when
planning and conducting a flight, and their attitudes about flying
issues. Results are based on returns received from 35% of the overall
sample. Analyses were conducted to assess possible bias due to
nonresponse effects by comparing respondent and nonrespondent groups on
accident involvement, age, gender, and recent and total flight
experience. No differences in accident involvement or in total flight
experience were found. However, on average, the respondent group tended
to be slightly older and to have slightly less recent flight experience
than the nonrespondent group. The implications of these findings are
discussed and cautions regarding the interpretation of the results are
given. This initial report describes the methodology used in
construction of the questionnaire and the procedures used for data
collection. The percentages of respondents selecting each of the
response alternatives for each question in the questionnaire are
provided. Means, standard deviations, and medians are reported for
those questions requiring exact numerical entries. Separate analyses of
all items are given for private, commercial, and airline transport
certificate categories. Possible applications of the data obtained from
this study are discussed and proposed follow-on analyses to be
conducted and reported in additional reports are described. 17.
KeyWords Pilots

AN (1) AD-A301 084/XAG
FG (2) 010500
040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Integrated Terminal Weather System (ITWS) Test and Evaluation Master
Plan (TEMP).
DN (9) Technical note

AU (10) Benner, William E.
Weiss, Thomas M.
Olivo, Jim
Yastrop, Gloria
Merkel, Anastatia
RD (11) Oct 1995
PG (12) 149 Pages
RS (14) DOT/FAA/CT-TN95/48
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *INTEGRATED SYSTEMS, *METEOROLOGICAL DATA, *WEATHER
FORECASTING, *AIR
TRAFFIC CONTROL TERMINAL AREAS
TEST AND EVALUATION, REQUIREMENTS, POLICIES, STRATEGY, ACQUISITION,
PRODUCTION, SPECIFICATIONS, OPERATIONAL EFFECTIVENESS, DOCUMENTS
AB (27) This Integrated Terminal Weather System (ITWS) Test and Evaluation
Master Plan (TEMP) lays the foundation for the ITWS test strategy,
resources, implementation and organization responsibilities. The test
efforts governed by this TEMP will ensure that ITWS meets the system
and subsystem requirements allocated to the project as defined by the
NAS-SS-1000, NAS-SR-1000, Operational Requirements Document (ORD) and
FAA-E-2900 (ITWS system Specification). This TEMP further describes
the Test and Evaluation (T&E) components for meeting program objectives
for each acquisition phase. ITWS will follow the procedures for
Operational Test and Evaluation (OT&E) stated in Federal Aviation
Administration (FAA) Order 1810.4B. The TEMP format is in accordance
with FAA-STD-024b. This document was approved by the Test Policy and
Review Committee (TPRC) on July 2%, 1995, in preparation for Key
Decision Point 3 (KDP-3) and the system limited production phase. 17.
Key Words Integrated Terminal Weather System (ITWS) Test and Evaluation
Master Plan (TEMP) Operational Test and Evaluation (OT&E)

AN (1) AD-A301 693/XAG
FG (2) 010305
131200
230500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
RESEARCH
TI (6) Proposed Cabin Safety Research Program (Transport Category Airplanes).
DN (9) Final rept.
AU (10) Hill, Richard
RD (11) Oct 1995

PG (12) 68 Pages
 RS (14) DOT/FAA/AR-95/14, TP-12570
 RN (18) XH-XD
 RC (20) Unclassified report
 DE (23) *SURVIVAL(GENERAL), *SAFETY, *TRANSPORT AIRCRAFT, *CRASHWORTHINESS, *AIRCRAFT CABINS
 MATHEMATICAL MODELS, INTEGRATED SYSTEMS, RISK, DATA MANAGEMENT, INFORMATION SYSTEMS, SURVIVABILITY, STRUCTURAL PROPERTIES, WATER, PROBABILITY, CANADA, AERONAUTICS, BENEFITS, EVACUATION, NORTH AMERICA, CRASHES, ACCIDENTS, FIRE SAFETY
 ID (25) CABIN SAFETY, BENEFIT ANALYSIS, RISK ANALYSIS, FIRE SAFETY, CRASH DYNAMICS, AIRCRAFT EVACUATION
 AB (27) Cabin safety presents challenges common to all aviation authorities. Related issues and needed research must be accomplished through a totally integrated program. To enhance their respective research capabilities, the U.S. Federal Aviation Administration (FAA) and the Transport Canada Aviation (TCA), the aviation authorities of North America, and the Joint Aviation Authorities (JAA), the aviation authority of Europe, have, as they have been doing in rulemaking, agreed to cooperate in research on transport category airplane cabin safety. The FAA/JAA/TCA Cabin Safety Research Program is the formalization of this agreement. Specifically, the goal of the Cabin Safety Research Program is to provide a mechanism for the coordination of pertinent activities and, as appropriate, the conduct of cooperative, joint, and complementary programs to the benefit of the three authorities. For the purpose of this program, cabin safety is intended to address acute events/conditions which can be dealt with by changes within (or closely associated with) the cabin. Although in-flight issues form an integral part of cabin safety, the primary focus is postcrash survivability, the principal elements of which are structural crashworthiness, fire safety, evacuation, and overwater survival. The foremost decision-making tools to identify and assess the potential benefits of needed research (and of past improvements) are a probabilistic risk analysis model and a cabin safety accident/incident information data bank/base.

AN (1) AD-A302 178/XAG
 FG (2) 170900
 CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
 TI (6) Operational Test And Evaluation (OT&E) Operational Test Procedures for

Type II Fixed Ground Antenna Radome (FGAR).

DN (9) Technical note
 AU (10) Baker, Leonard H.
 Sedgwick, Harold G.
 RD (11) Oct 1995
 PG (12) 67 Pages
 RS (14) DOT/FAA/CT-TN95/54
 RN (18) XH-XD
 RC (20) Unclassified report
 DE (23) *RADOMES, *RADAR ANTENNAS
 TEST AND EVALUATION, PERFORMANCE TESTS, ELECTROMAGNETIC PROPERTIES, CONTRACTORS, TEST METHODS, OPERATIONAL EFFECTIVENESS, HUMAN FACTORS
 ENGINEERING, TOWERS, INSPECTION, ENVIRONMENTAL PROTECTION, RADAR STATIONS, HAWAII, ACCEPTABILITY, FIELD CONDITIONS, BEACONS
 ID (25) FGAR(FIXED GROUND ANTENNA RADOME), ATCRBS(AIR TRAFFIC CONTROL RADAR BEACON SYSTEM)
 AB (27) This document defines the Type II Fixed Ground Antenna Radome (FGAR) operational Test and Evaluation (OT&E) operational test procedures that will be performed at Federal Aviation Administration (FAA) field facilities.

AN (1) AD-A302 457/XAG
 FG (2) 010300
 090100
 170900
 CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
 TI (6) Operational Test and Evaluation (OT&E) Operational Test Plan for Type II fixed Ground Antenna Radome (FGAR).
 DN (9) Technical note
 AU (10) Baker, Leonard H.
 Sedgwick, Harold G.
 RD (11) Oct 1995
 PG (12) 60 Pages
 RS (14) DOT/FAA/CT-TN95/53
 RN (18) XH-XD
 RC (20) Unclassified report
 DE (23) *RADOMES, *AIRCRAFT ANTENNAS
 TEST AND EVALUATION, GROUND LEVEL, SPECIFICATIONS, OPERATIONAL

EFFECTIVENESS, TOWERS, AIRPORT RADAR SYSTEMS, PLANNING, ENVIRONMENTAL

PROTECTION, RADAR STATIONS, SEARCH RADAR, HAWAII, BEACONS
AB (27) The Federal Aviation Administration (FAA) Operational Test and Evaluation (OT&E) Operational Test Plan for Type II Fixed Ground Antenna Radome (FGAR) is prepared by the Associate Program Manager for Test (APMT). It defines the overall planning, test activities, and coordination associated with OT&E Operational testing required to ensure the project meets the requirements of the project specification, and the system and subsystem requirements allocated to the project. The purpose of the FGAR project is to provide new, larger radomes for en route surveillance radars and for Beacon Only Sites (BOS) that require Mode Select Beacon System (Mode S) installations.

AN (1) AD-A303 409/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Mark 20 Category II/III Instrument Landing System Operational Test and Evaluation, Functional and Performance Test Report.

DN (9) Technical note Jul 94-Mar 95

AU (10) Jones, Jesse

RD (11) Oct 1995

PG (12) 75 Pages

RS (14) DOT/FAA/CT-TN95/44

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS

TEST AND EVALUATION, COMPUTER PROGRAMS, MAINTENANCE, DEPLOYMENT, MICROPROCESSORS, MONITORING, PERFORMANCE TESTS, INTERFACES, MODULAR

CONSTRUCTION, TEST EQUIPMENT, OPERATIONAL EFFECTIVENESS, GROUND CONTROLLED APPROACH RADAR, CONFIGURATIONS, REMOTE DETECTORS, INSPECTION, DATA ACQUISITION, MARKERS, FAILURE(ELECTRONICS), COLD WEATHER TESTS, BEACONS, GLIDE SLOPE

AB (27) This test report documents the results of the Operational Test and Evaluation (OT&E) Functional and Performance tests conducted on the Category II/III Mark 20 Instrument Landing System (ILS) at the FAA technical Center, Atlantic City International Airport, Atlantic City, NJ. The Mark 20 ILS modular design is based on a new generation of microprocessors and software. With Remote Maintenance Monitoring (RMM) capability and the concept of "remove and replace" maintenance, it will

provide major airway facilities throughout the U.S. with a more reliable and easily maintained system. The report contains the system configuration, test descriptions, test equipment used, data collection and analysis methods, test results, and conclusions. Based on testing performed at the FAA Technical Center, it is recommended that the Mark 20 ILS be accepted for deployment.

AN (1) AD-A299 949/XAG

FG (2) 010200
250100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Flight Simulator Evaluation of Baseline Crew Performance with Three Data Link Interfaces.

DN (9) Technical note

AU (10) Rehmann, Albert J.
vanGent, R. N.
Bohnen, H. G.
Jorna, P. G.

RD (11) Sep 1995

PG (12) 53 Pages

RS (14) DOT/FAA/CT-TN95/19

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Prepared in collaboration with the National Aerospace Lab., Amsterdam, The Netherlands.

DE (23) *INTERFACES, *FLIGHT SIMULATORS, *DATA LINKS
TEST AND EVALUATION, FUNCTIONS, FLIGHT TESTING, POSITION(LOCATION), COCKPITS, NETHERLANDS, PERFORMANCE(HUMAN), TURBULENCE, HUMAN FACTORS

ENGINEERING, DISPLAY SYSTEMS, BASE LINES, INTEGRATION, CREWS, STORMS, COMMUNICATION AND RADIO SYSTEMS, PHYSIOLOGY, FLIGHT ENVELOPE, OCEANS,

RESPIRATION, WORKLOAD, NORTH ATLANTIC OCEAN, ACCEPTABILITY

AB (27) This study was conducted by the National Laboratory for Research of the Netherlands under cooperative sponsorship by the Federal Aviation Administration (FAA), and the Ministry of Transport of the Netherlands. The purpose of the study was the evaluation and measure of fundamental level of effort associated with the use of Data Link as a communications medium. Three Data Link interface designs were evaluated which combined effects of location, operability, size, and level of integration with the cockpit. The scenario was an oceanic flight of 2

hours duration, from a point over the North Atlantic, across the British Isles to a landing at Sciphol Airport, Amsterdam. Experimental conditions included routine flight and diversions in the flight due to oceanic storms and turbulence, enroute traffic conflicts, and airport runway closings. Data measures included subjective assessments of display usefulness, workload, and overall acceptability of Data Link compared to voice and objective measures of level of effort, and errors. In addition, physiological measures of heartrate, respiration, and head position were logged, and correlated with events of the flight. Overall, Data Link was rated acceptable in certain flight regimes, and unacceptable in others. Where excessive key entries were required, the Data Link function was rated lower than voice, and where automation alleviated the need for excessive keying, Data Link was rated about the same as voice.

AN (1) AD-A303 397/XAG
FG (2) 190100
010600
130400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Bulk Explosives Detection System Developmental Test and Evaluation: General Protocol for Screening Baggage and Electronics

AU (10) Krauss, Ronald A.
Novakoff, A. K.

RD (11) Sep 1995
PG (12) 40 Pages
RS (14) DOT/FAA/AR-95/58
RN (18) XH-DOT/FAA/AR
RC (20) Unclassified report

DE (23) *ELECTRONICS, *BULK MATERIALS, *EXPLOSIVES DETECTION TEST AND EVALUATION, MANAGEMENT PLANNING AND CONTROL, PASSENGERS, TEST MANAGEMENT, BAGS

ID (25) *SCREENING, *BAGGAGE, PASSENGER LUGGAGE

AB (27) Development of devices and systems for detection of explosives in passenger luggage is supported by test and evaluation. This document provides a framework for the structured implementation of developmental test and evaluation for the bulk explosives detection program. Planning considerations, general test objectives, evaluation techniques and test management controls are discussed. Guidelines are presented for preparing detailed test and evaluation plans and summary reports for each test and evaluation effort. Standard forms to be used in testing

are provided as an appendix. jg p3

AN (1) AD-A303 698/XAG

FG (2) 010400
120600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Plan View Display Baseline Research Report.

DN (9) Technical note, Jan-Mar 95

AU (10) Galushka, J.
Frederick, J.
Mogford, R.
Krois, P.

RD (11) Sep 1995

PG (12) 59 Pages

RS (14) DOT/FAA/CT-TN95/45

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *HOST COMPUTERS, *AIR TRAFFIC CONTROL SYSTEMS, *ROUTING, *DATA DISPLAYS

SCENARIOS, OBSERVERS, SIMULATION, MEASUREMENT, POSITION(LOCATION),

REPORTS, RADAR, BASE LINES, AIR SPACE, DATA ACQUISITION, SYSTEMS ANALYSIS, WORKLOAD, QUESTIONNAIRES

ID (25) ZDC(WASHINGTON AIR ROUTE TRAFFIC CONTROL CENTER), SAR(SYSTEM AND

ANALYSIS RECORDING), HCS(HOST COMPUTER SYSTEM), PVD(PLAN VIEW DISPLAY)

AB (27) The goal of this study was to provide baseline measurements of the current en route system consisting of the Host Computer System, the Plan View Display, and the MI console. A set of measures were developed that related to Six high level operational constructs: Safety, Capacity, Performance, Workload, Usability, and System Fidelity. In order to collect data on these measures, an air traffic control simulation was completed, using Washington Air Route Traffic Control Center (ZDC) airspace, controllers from ZOC, and a traffic scenario based on ZOC System and Analysis Recording (SAR) data. Objective measures were reduced from SAR and Amecom tapes. Subjective-data were collected using controller and observer questionnaires. Complete data were obtained for 22 measures and partial data were obtained for 5 measures. Summary measures were presented, in different levels of detail, for the overall simulation and by sector and specific time period. The data provided a meaningful representation of the radar

operational position and a partial representation of the radar associate position. Several limitations and constraints on the data were discussed. Refinements to baseline measures and changes in methodology were recommended. It was also suggested, for future baseline studies, that additional simulation runs be completed. Advice was provided on using baseline data to make comparisons between systems.

AN (1) AD-A303 800/XAG

FG (2) 010200

050800

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Effects of Structured Arrival and Departure Procedures on TRACON Air Traffic Controller Memory and Situational Awareness.

DN (9) Technical note

AU (10) Sollenberger, Randy L.
Stein, Earl S.

RD (11) Sep 1995

PG (12) 103 Pages

RS (14) DOT/FAA/CT-TN95/27

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *MEMORY(PSYCHOLOGY), *AVIATION SAFETY, *AIR TRAFFIC CONTROLLERS, *AWARENESS

CONTROL SYSTEMS, MONITORING, AIR TRAFFIC CONTROL SYSTEMS, MEMORY DEVICES, LIMITATIONS, INSTRUMENTATION, ROUTING, WORKLOAD, CONTINUITY,

ARRIVAL, BENEFITS, WOMEN, DEBRIEFING

AB (27) Air traffic control (ATC) is conducted by men and women of the Federal Aviation Administration's (FAA) air traffic service. Controllers do an excellent job of keeping aircraft separated and safe. However, they do make mistakes. Many of these errors are caused by the limitations of working memory, which controllers continuously use to maintain situational awareness (SA). An experiment was conducted at the FAA Technical Center Human Factors Laboratory to examine the potential benefits of a memory aiding concept on controller performance, SA, and workload. The advanced use of Standard Terminal Arrival Routes (STARs) and Standard Instrument Departures (SIDs) were selected as the memory aids for testing. These specially-designed STARs and SIDs were intended to simplify the controller's task and allow more time for planning and monitoring aircraft. A new high-fidelity ATC simulator was used which

allowed controllers to work under extremely realistic conditions. Sixteen controllers from Atlantic City TRACON participated and worked scenarios consisting of low and high traffic volumes both with and without the memory aids. Controllers' actions and aircraft data were recorded during each scenario and used to evaluate ATC performance. Other evaluation methods included the Air Traffic Workload Input Technique and a modification of the Situational Awareness Global Assessment Technique. The results indicated that the memory aids decreased both the number of ground-to-air transmissions and handoff errors. Controller workload and SA were primarily determined by the traffic volume and were not affected by the memory aids. A final debriefing with controllers suggested several ways the memory aids and SA technique could be improved.

AN (1) AD-B206 239/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Dupe Checklist System (DCS) Test and Evaluation Report.

DN (9) Final rept.

AU (10) Fobes, J. L.
McAnulty, D. M.
Klock, Brenda A.
Barrientos, J. M.

RD (11) Sep 1995

PG (12) 39 Pages

RS (14) DOT/FAA/CT-95/42

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: Further dissemination only as directed by U.S. Department of Transportation, Federal Aviation Administration, Office of Civil Aviation Security, 800 Independence Ave. SW, Washington, DC 20591, 18 Oct 95, or higher DoD authority.

DE (23) *CIVIL AVIATION, *AVIATION SAFETY TEST AND EVALUATION, COST ESTIMATES, OPERATIONAL EFFECTIVENESS, SURVEYS, AIRPORTS, AIR TRANSPORTATION, QUESTIONNAIRES,

PASSENGERS,
CHECKOUT PROCEDURES

ID (25) CHECKLISTS

DL (33) 05

AN (1) AD-A299 212/XAG

FG (2) 061100
010200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Role of Metabolites in Aviation Forensic Toxicology.

DN (9) Final rept.

AU (10) Chaturvedi, Arvind K.
Canfield, Dennis V.

RD (11) Aug 1995

PG (12) 9 Pages

RN (18) DOT/FAA/AM-95/26
XH-XD

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *METABOLITES, *TOXICOLOGY
AIRCRAFT, EXPOSURE(GENERAL), SENSITIVITY, AERONAUTICS, MEDICINE,
CHEMICAL REACTIONS, PHYSIOLOGICAL EFFECTS, STANDARDS, CASUALTIES,
DRUGS, DETERMINATION, COCAINE, INACTIVATION, LITIGATION, DIAZEPAM,
ACCIDENT INVESTIGATIONS, OXAZEPAM

ID (25) *AVIATION FORENSIC TOXICOLOGY, DMG METABOLITES, METABOLITE
ANALYSES,
TOXICOLOGY RESULT INTERPRETATION

AB (27) In aviation accident investigations, specimens from fatal aircraft victims are analyzed for drugs. Their presence indicates exposure to drugs and suggests possible associated medical conditions for which they might have been taken. As drugs are mostly present in therapeutic to subtherapeutic levels in aviation forensic toxicology cases, determination of parent drugs and their metabolites in multi specimens is of significance. Although chemically reactive metabolites are difficult to detect, physiologically active and inactive metabolites can be analyzed. Selective and sensitive techniques are available, but unavailability of metabolite reference standards, endogenous substance interference, and low tissue metabolite levels limit the analyses. However, the majority of primary metabolites can be effectively characterized/quantitated. Demonstrating the presence of drug (e.g., terfenadine, cocaine, THC) metabolites provides a compelling evidence for exposure to the parent drug and facilitates interpretation of results, particularly when the metabolites are active. Such analyses are not as helpful if the metabolites are also available as drugs (e.g., diazepam, temazepam, oxazepam).

AN (1) AD-A299 237/XAG
FG (2) 230200

060500
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Aircraft Evacuations Through Type-III Exits II: Effects of Individual
Subject Differences.

DN (9) Final rept.

AU (10) McLean, G. A.
George, M. H.

RD (11) Aug 1995

PG (12) 21 Pages

RS (14) DOT/FAA/AM-95/25

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *EMERGENCIES, *AIRCRAFT, *CAPACITY(QUANTITY), *HUMAN FACTORS
ENGINEERING, *AEROMEDICAL EVACUATION
SIMULATION, GROUND LEVEL, OPTIMIZATION, UNITED STATES GOVERNMENT,
DEMONSTRATIONS, AERONAUTICS, CREWS, TRANSPORT, ROUTING,

TRANSPORT

AIRCRAFT, ESCAPE SYSTEMS, REGULATIONS, ERGONOMICS, EXITS,
PASSENGERS,
EVACUATION, SEATS

ID (25) *EMERGENCY EXITS

AB (27) In recognition of this principle, the Federal Aviation Administration (FAA) has established several Federal Aviation Regulations (FAR) to assure that transport category aircraft are designed, manufactured, and operated in a manner that provides passengers an optimum emergency evacuation capability. Regulations that address the emergency evacuation capability of transport category aircraft include Section 25.807, Emergency exits; Section 25.809, Emergency exit arrangement; Section 25.810, Emergency egress assist means and escape routes; Section 25.811, Emergency exit marking; and Section 25.813, Emergency exit access. Each of these rules is specified in terms of the minimum criteria necessary for compliance; combined, these FARs provide for initial indications that transport category aircraft are designed to provide sufficient evacuation capability to comply with Section 25.803, Emergency evacuation, the so-called 90 second rule. Section 25.803 requires that, to be certificated under Section part 25, any type of transport category aircraft with a seating capacity greater than 44 passengers must be shown to be capable of evacuating its maximum seating capacity (including crewmembers) from the airplane to the ground in 90 seconds or less. FAR part 25, Appendix J, specifies the demonstration criteria and procedures to be used for showing compliance

with this rule; Advisory Circular (AC) 25.803 provides further clarifications of how the demonstration(s) should be conducted.

AN (1) AD-A299 963/XAG

FG (2) 010200
050900
131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Airport Security Screener and Checkpoint Security Supervisor Training Workshops.

DN (9) Final rept.

AU (10) Fobes, J. L.
Lafaro, Ronald
Klock, Brenda
Gibb, Gerald D.
Baker, James S.

RD (11) Aug 1995

PG (12) 121 Pages

RS (14) DOT/FAA/AR-95/35

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *JOB TRAINING, *PERFORMANCE TESTS, *SECURITY, *AVIATION SAFETY, *MANAGEMENT TRAINING SKILLS, RESOLUTION, X RAYS, SUPERVISORS, COMMUNICATION AND RADIO SYSTEMS, CONFLICT, AIRPORTS, PASSENGERS, INTERPERSONAL RELATIONS,

BAGS

AB (27) This report describes the development and implementation of a unique program to improve the interpersonal skills of airline passenger baggage screener personnel and their supervisors. Training emphasized communication and conflict resolution skills.

AN (1) AD-A302 726/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) National Simulation Capability Reduced Vertical Separation Minima. Phase I. Result Report.

DN (9) Technical note, Dec 93-Jan 94

AU (10) Seeger, Diena
Roske-Hofstrand, R.

RD (11) Aug 1995

PG (12) 83 Pages

RS (14) DOT/FAA/CT-TN95/20

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIR NAVIGATION

SCANNING, IONS, POSITION(LOCATION), HIGH FREQUENCY, AIRCRAFT, REPORTS, DISPLAY SYSTEMS, REDUCTION, VERTICAL ORIENTATION, PLANNING, AIR SPACE,

SEPARATION, OCEANS, WORKLOAD, FLIGHT SIMULATION, AIR TRAFFIC CONTROLLERS, NORTH ATLANTIC OCEAN

AB (27) The Reduced Vertical Separation Minima (RVSM) experiment resulted from the North Atlantic (NAT) System Planning Group's conclusion to carry out studies aimed at achieving early implementation of RVSM in the NAT Region. RVSM is an approved International Civil Aviation Organization concept to reduce aircraft vertical separation from the Conventional Vertical Separation Minima (CVSM) of 2,000 feet to 1,000 feet. This reduction occurs between flight level 290 to 410, within a designated portion of the NAT region. Phase I investigated workload changes resulting from the transition of westbound aircraft from RVSM to CVSM before leaving defined nonradar RVSM airspace. The simulated New York Air Route Traffic Control Center Oceanic Sectors D71 and D72 were configured with an Oceanic Display and Planning System position to replicate controller operations, including simulated high frequency and inter- and intra-facility communications. The RVSM procedure increased the amount of available altitudes, thus providing the controller with greater flexibility for managing traffic. However, simulation results indicated that controllers operating under RVSM conditions experienced increased coordination requirements, longer display scanning times, and needed additional information from aircraft as compared to CVSM.

AN (1) AD-A309 253/XAG

FG (2) 170703

010200

220200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) FAA Satellite Navigation Program Master Plan FY 1995 - 2000.

RD (11) 31 Aug 1995

PG (12) 73 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *GLOBAL POSITIONING SYSTEM, *NAVIGATION SATELLITES, *CIVIL AVIATION AUGMENTATION, PLANNING, NAVIGATIONAL AIDS

ID (25) GLONASS SATELLITES, GLONASS(GLOBAL ORBITING NAVIGATIONAL SATELLITE SYSTEM)

AB (27) The Satellite Navigation Program Master Plan presents the needs, scope, objectives, and other requisite planning information for the Federal Aviation Administration's (FAA) Satellite Navigation Program for the period from fiscal year 1995 through fiscal year 2000. The purpose of this plan is to (1) provide an opportunity for review and approval of the Satellite Navigation Program; (2) describe FAA satellite navigation research, development, and acquisition activities for all interested civil aviation organizations; and (3) provide schedules for civil augmentation and operational implementation of the Global Positioning System (GPS) in the National Airspace System (NAS). The plan contains an executive overview of the overall program and supporting program efforts, GPS and Global Orbiting Navigation Satellite System (GLONASS) descriptions (Appendices A and B, respectively), descriptions of the individual projects and subprojects comprising the overall program (Appendix C), program milestones (Appendix D), Program Manager's Charter (Appendix E), a list of critical satellite navigation milestones already achieved (Appendix F), and a list of acronyms used in the plan (Appendix G).

AN (1) AD-A297 286/XAG

FG (2) 230600
010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Aircraft Evacuations Through Type-III Exits. 1: Effects of Seat Placement at the Exit.

DN (9) Final rept.

AU (10) McLean, G. A.
George, M. H.
Chittum, C. B.
Funkhouser, G. E.

RD (11) Jul 1995

PG (12) 13 Pages

RS (14) DOT/FAA/AM-95/22

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *EMERGENCIES, *AVIATION SAFETY, *EXITS, *PASSENGERS, *SEATS SIMULATION, OPENING(PROCESS), RATES, TIME, EMPLACEMENT, DELAY, RANGE(DISTANCE)

ID (25) TYPE III EXITS, EMERGENCY EXITS

AB (27) INTRODUCTION. Simulated emergency egress from Type III over-wing exits was studied to support regulatory action by the FAA. Passageway width and seat encroachment distance adjacent to the Type-III exit were the major variables of interest. METHODS. Two subject groups of differing mean ages were employed in a repeated-measures evaluation of different passageway widths leading to the exit in the CAM aircraft cabin evacuation facility. Main effects of passageway width and seat encroachment distance on egress rates were determined using analysis of variance (AN OVA); RESULTS. Main effects were found for passageway width ($p < .001$), seat encroachment distance ($p < .001$), and subject group ($p < .001$). The passageway width resulted from slowed egress at 6 and 10 inch wide passageways relative to 13, 15, and 20 inch passageways; seat encroachment effects were found for maximum seat encroachments but not midpoint and minimum encroachment distances. The subject group effects were found to result from a general increase in egress time for the older subject group. CONCLUSIONS. The placement of seat assemblies at the Type-III exit has significant effects on passenger egress through the exit opening. Narrow passageways and/or large encroachments of the seat into the area of the exit opening delay egress significantly. Relative to the younger subjects, older subjects were found to have a general increase in egress times at all seat placement configurations that did not appear to worsen as the access route to the exit was made more restrictive.

AN (1) AD-A298 378/XAG

FG (2) 131200
210200
110900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Fire Calorimetry

AU (10) Lyon, Richard E.

RD (11) Jul 1995

PG (12) 205 Pages

RS (14) DOT/FAA/CT-95/46

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FIRES, *FLAMMABILITY, *CALORIMETRY, *FIRE HAZARDS

MATHEMATICAL MODELS, SYMPOSIA, REACTION KINETICS, POLYMERS, THERMAL STABILITY, POLYPROPYLENE, SMOKE, THERMAL ANALYSIS, THERMAL

CONDUCTIVITY, THERMOPLASTIC RESINS, IGNITION, FLAME PROPAGATION, HEAT

FLUX, FIRE SUPPRESSION, FIRE EXTINGUISHING AGENTS, PYROLYSIS, FIRE RESISTANT MATERIALS, OXYGEN CONSUMPTION, THERMOPILES, PHENOLIC PLASTICS, TRIAZINES, COMBUSTION PRODUCTS, THERMOGRAVIMETRIC

ANALYSIS,

PHOSPHINE OXIDES

ID (25) HEAT RELEASE

AB (27) This report is a compilation of papers presented at a special symposium on Fire Calorimetry held at NIST, Gaithersburg, MD, on July 27-28, 1995. It includes papers on the theory, instrumentation, and use of fire (or heat release) calorimetry in assessing the fire hazard of materials. (AN)

AN (1) AD-A298 779/XAG

FG (2) 010500

050900

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Initial Development of Selection Instruments for Evaluating Applicants as Potential Airline Passenger Baggage Screeners for Conventional X-Ray Technology.

DN (9) Final rept.

AU (10) Fobes, J. L.

McAnulty, D. M.

RD (11) Jul 1995

PG (12) 21 Pages

RS (14) DOT/FAA/CT-95/41

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERSONNEL SELECTION, *AIRPORTS, *PASSENGERS, *X RAY APPARATUS INDUSTRIES, HIGH RATE, PREDICTIONS, VALIDATION, TRAINING, TOOLS, COGNITION, X RAYS, INSTRUMENTATION, COMPUTER APPLICATIONS, LOSSES,

AREA

SECURITY, PILOT STUDIES, PERSONNEL RETENTION

ID (25) SCREENING

AB (27) Currently there is a paucity of research that has been conducted to improve the selection process for airline passenger baggage screener personnel. Careful selection of these personnel is important to obtain the best qualified personnel and to mitigate the characteristically high employee turnover rate that is associated with the training losses in this industry. This report describes the development and evaluation

of two computer-based cognitive instruments that were examined as possible selection tools. The results from a concurrent validity pilot study demonstrated a strong relationship between measures from the predictor instruments and selected performance criteria.

AN (1) AD-A300 017/XAG

FG (2) 061100

201300

210200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

RESEARCH

TI (6) Toxicity Assessment of Combustion Gases and Development of a Survival Model.

DN (9) Final rept.

AU (10) Speitel, Louise C.

RD (11) Jul 1995

PG (12) 140 Pages

RS (14) DOT/FAA/AR-95/5

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *THERMAL PROPERTIES, *TOXIC HAZARDS, *TOXICITY, *COMBUSTION PRODUCTS

EXPOSURE(GENERAL), HUMANS, SURVIVAL(GENERAL), GASES, REGRESSION ANALYSIS, LETHALITY, MIXING, PRIMATES, EQUATIONS, MICE, CARBON

DIOXIDE,

SURVIVAL(PERSONNEL), AIRCRAFT FIRES, INCAPACITATION, AIRCRAFT

CABINS

ID (25) SURVIVAL MODEL FRACTIONAL EFFECTIVE DOSE

AB (27) This report presents an extensive review of the literature on the toxic and thermal hazards relating to human survival in aircraft cabin fires.

Studies by various authors of exposures to single and mixed gases on humans, primates, rats and mice are presented for different activity levels and a wide range of concentrations and temperatures. Regression equations giving the best fit were derived from these studies. The regression equation which was judged to best model the human escaping from an aircraft cabin fire was selected for each gas and utilized in the survival model. The effect of carbon dioxide increasing the uptake of other gases was included in the model. This survival model uses incapacitation data to obtain a fractional effective dose for incapacitation (FED1) and lethality data to obtain a fractional effective dose for lethality (FEDI). The time when either FED reaches 1 determines the exposure time available to escape from an aircraft cabin

fire and to survive postexposure.

AN (1) AD-A302 910/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Oceanic In-Trail Climb Full Mission Simulation Experiment Plan and Results.

DN (9) Technical note Feb-Aug 94.

RD (11) Jul 1995

PG (12) 94 Pages

RS (14) DOT/FAA/CT-TN95/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *FREE FLIGHT, *RATE OF CLIMB INDICATORS

TEST AND EVALUATION, SIMULATORS, SCENARIOS, OBSERVERS, SIMULATION, FLIGHT TESTING, CONTROL SYSTEMS, INDUSTRIES, AIRCRAFT, COCKPITS, FLIGHT

CREWS, REAL TIME, TRAFFIC, OPERATIONAL READINESS, FACILITIES, COMMERCIAL AVIATION, IDENTIFICATION, AIR SPACE, SEPARATION, MANEUVERS,

OCEANS, PACIFIC OCEAN, RANGE(DISTANCE), COLLISION AVOIDANCE, LEAD TIME,

RADIO OPERATORS

AB (27) This document describes the experiment plan and test results from an In-Trail Climb (ITC) end-to-end simulation study. This study was conducted by the National Simulation Capability ITC Experimentation Working Group at the Federal Aviation Administration (FAA) Technical Center. The ITC procedure was developed by the Traffic Alert and Collision Avoidance System (TCAS) Separation Assistance Working Group. The procedure enables an aircraft, traveling in oceanic non-radar controlled airspace, to climb through the altitude of an aircraft ahead when positive lead aircraft identification and separation distance can be established using TCAS. End-to-end simulations were conducted at the FAA Technical Center utilizing the Oceanic Development Facility and the Reconfigurable Cockpit Simulator. Simulation participants included two flight crews from Delta and United Airlines, two FAA oceanic controllers, and an Aeronautical Radio, Inc. radio operator. The end-to-end simulation consisted of one scenario, with six individual conditions, involving eastbound and westbound tracks in Pacific oceanic airspace. Flight crews used a checklist derived from ITC training Bulletins as a guide to evaluate the applicability of the maneuver.

FAA, airline, and industry observers present at the test considered the simulation to be a success. As a result of the simulation, the proposed training guide was updated. Conclusions reached from this effort indicate that real time, human-in-the-loop simulations, with flight crews and controllers, are effective for the evaluation of proposed procedures. The scenarios tested demonstrated that the ITC procedure is safe and ready for approval, as assessed in the simulated conditions described in this study.

AN (1) AD-B202 020/XAG

FG (2) 190100

010100

070200

170800

200400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) An Assessment of the Aerodynamic Efficiency of Air Sampling in the CPAD holdings Ltd. Explosives Detection Portal.

DN (9) Final rept.

AU (10) Connelly, James M.
Gatto, Joseph A.

Settles, Gary S.

RD (11) Jul 1995

PG (12) 22 Pages

RS (14) DOT/FAA/CT-95/45

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution authorized to U.S. Gov't. agencies only. Other requests shall be referred to US Dept. of Transportation/FAA, Office of Civil Aviation Security, Washington, DC 20390.

DE (23) *AIR FLOW, *SAMPLING, *AERODYNAMICS, *EXPLOSIVES DETECTION EFFICIENCY, FLOW VISUALIZATION, PATTERNS, INSTRUMENTATION, FLUID DYNAMICS, FIGURE OF MERIT

ID (25) PORTAL

DL (33) 13

AN (1) AD-A294 511/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Fixed Ground Antenna Radome (FGAR) Type I/III OT&E Integrations and

OT&E operational.

DN (9) Final test rept.

AU (10) Baker, Leonard H.
Sedgwick, Harold G.

RD (11) May 1995

PG (12) 180 Pages

RS (14) DOT/FAA/CT-TN95/23

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *RADOMES, *RADAR ANTENNAS

TEST AND EVALUATION, REQUIREMENTS, GROUND LEVEL, DEGRADATION,
PERFORMANCE TESTS, PERFORMANCE(HUMAN), PHYSICAL PROPERTIES,
SECONDARY,

ELECTROMAGNETIC PROPERTIES, TEST METHODS, RADAR, OPERATIONAL
EFFECTIVENESS, HUMAN FACTORS ENGINEERING, ELECTROMAGNETIC
RADIATION,

RADAR STATIONS, COLORADO, L BAND, RADAR REFLECTORS

ID (25) *SURVEILLANCE RADAR, FGAR(FIXED GROUND ANTENNA RADOME),
ARSR(AIR ROUTE

SURVEILLANCE RADAR)

AB (27) This test report documents the Operational Test and Evaluation (OT&E) integration and OT&E Operational testing performed on the Type I/III, Fixed Ground Antenna Radome (FGAR). The Type I/III FGAR is used with the Air Route Surveillance Radar (ARSR)) -1/2 and AN/FPS military radars. The testing was performed at the Federal Aviation Administration (FAA) technical Center's Elwood En Route Beacon Test Facility (ERBTF) and the Northwest Mountain Region's Trinidad En Route Radar Facility (TAD), Colorado. The testing included: (1) characterization of the primary and secondary radar's electromagnetic performance, (2) human factors, (3) physical characteristics, and (4) physical performance. The electromagnetic performance testing showed no degradation of the primary or secondary radars; there were no human factor problems found; and only minor problems were identified during the physical characteristics and physical performance tests. The testing determined that the FGAR meets the Operational Suitability and Operational Effectiveness requirements of the FAA.

AN (1) AD-A294 591/XAG

FG (2) 010600

170900

010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Limited Production (LP) Precision Runway Monitor (PRM) Operational Test
and Evaluation (OT&E) Integration and OT&E Operational Test Plan.

DN (9) Technical note

AU (10) Livings, Jeffrey

RD (11) May 1995

PG (12) 36 Pages

RS (14) DOT/FAA/CT-TN95/2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRPORT RADAR SYSTEMS, *RUNWAYS, *INSTRUMENT LANDINGS

TEST AND EVALUATION, ACCEPTANCE TESTS, REQUIREMENTS, FLIGHT
TESTING,

MONITORING, RADAR TRACKING, AIR TRAFFIC CONTROL SYSTEMS,
OPERATIONAL

EFFECTIVENESS, MAINTAINABILITY, PRECISION, CIVIL AVIATION, DATA
DISPLAYS, MONOPULSE RADAR, SITE INVESTIGATIONS, SEARCH RADAR,
SYSTEM

SAFETY, PHASED ARRAYS, RADAR BEACONS, APPROACH INDICATORS

ID (25) PRECISION RUNWAY MONITOR

AB (27) This document defines the Test Plan and corresponding Test Verification Requirements Traceability Matrix (TVRTM) that will be used to conduct the Limited Production (LP) Precision Runway Monitor (PRM) Operational Test and Evaluation (OT&E) Integration and OT&E Operational tests. These tests will be conducted at the Minneapolis-St. Paul International Airport following the Contractor Site Acceptance Test. The LP PRM OT&E test effort will concentrate on Operational Effectiveness and Operational Suitability. The Operational Effectiveness Test consists of a review of the contractor performed Development Test and Evaluation (DT&E) and Site Acceptance Tests. This review will evaluate whether each of the Measures of Effectiveness had been satisfactorily tested and whether the results meet the Minimum Acceptable Operational Requirements (MAORs). This review will be conducted solely by test engineers and does not require the PRM system. The Operational Suitability Tests will expose the test participants (Air Traffic (AT) Controllers and Airway Facilities (AF) Technicians) to the PRM system in an operational environment while they perform specified operational procedures. These tests will be conducted in two separate phases: AT Suitability and AF Suitability. Each of these phases is focused on the specific test participants. (AN)

AN (1) AD-A294 803/XAG

FG (2) 140200
170900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Operational Test and Evaluation (OT&E) Integration and OT&E Operational
Test Plan for the Offshore Next Generation Weather Radar (NEXRAD).
DN (9) Technical note
AU (10) Martinez, Radame
Stretcher, Baxter
Porcello, John
Guthlein, Peter
Diviney, William
RD (11) May 1995
PG (12) 61 Pages
RS (14) DOT/FAA/CT-TN95/21
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *METEOROLOGICAL RADAR
TEST AND EVALUATION, ACQUISITION, MONITORING, TEST METHODS,
OPERATIONAL
EFFECTIVENESS, PLANNING, CONFIGURATIONS, AIR SPACE, REMOTE
DETECTORS,
REDUNDANCY, HAWAII
AB (27) This document provides the overall philosophy and approach for the
National Airspace (NAS) Phase I Operational Test and Evaluation (OT&E)
Integration and OT&E Operational Testing of the Offshore Next
Generation Weather Radar (NEXRAD). A total of 14 Offshore NEXRADs will
be procured under this acquisition: 3 in the Caribbean, 4 in Hawaii,
and seven 7 in Alaska. OT&E testing will be performed in two phases.
Phase I testing will be performed on the redundant configuration in
November 1994, in Kauai, Hawaii, and is described herein. Phase II
testing will be performed on the Remote Monitoring Subsystem (RMS) at a
later date and is not described in this document. A separate test plan
and test procedures will be developed for Phase II OT&E Integration and
OT&E Operational Testing. The focus of this document is on Phase I
limited OT&E Integration and OT&E Operational testing of the Offshore
NEXRAD. The testing is limited in nature due to the extensive testing
already performed on the single-channel NEXRAD system by the Joint
System Program Office (JSPO) and funding constraints placed upon the
Federal Aviation Administration (FAA).

AN (1) AD-A295 009/XAG
FG (2) 250200

250400
010600
120500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) Development of a Coding Form for Approach Control/Pilot Voice
Communications.
DN (9) Final rept.
AU (10) Prinzo, O. V.
Britton, Thomas W.
Hendrix, Alfred M.
RD (11) May 1995
PG (12) 32 Pages
RS (14) DOT/FAA/AM-95/15
CT (15) DTFA02-91-C-91089
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *COMMUNICATION AND RADIO SYSTEMS, *VOICE COMMUNICATIONS
DATA BASES, COMPUTERIZED SIMULATION, DATA MANAGEMENT,
COMMUNICATIONS
TRAFFIC, COMPARISON, COMPUTER PROGRAMMING, PILOTS, AIR TRAFFIC
CONTROL
SYSTEMS, CLASSIFICATION, DATA ACQUISITION, STANDARDIZATION, SPEECH
RECOGNITION, PATTERN RECOGNITION, EXPERT SYSTEMS, SPEECH
ANALYSIS,
SPEECH TRANSMISSION, AVIATION SAFETY, MESSAGE PROCESSING, AIR
TRAFFIC
CONTROLLERS, ERROR CORRECTION CODES, TAXONOMY
AB (27) The Aviation Topics Speech Acts Taxonomy (ATSAT) is a tool for
categorizing pilot/controller communications according to their purpose
and for classifying communication errors. Air traffic controller
communications that deviate from FAA Air Traffic Control Order 7110.65,
and pilot communications that depart from the suggested communication
in the Airman's Information Manual can be identified and labeled using
the error codes provided in the ATSAT. By using the same procedures
and tool to analyze communications, direct comparisons can be made
between controller phraseology usage in the field and during
simulation. Results of a preliminary study to measure inter-coder
agreement revealed that novice coders were more dependent on the
surface characteristics of the verbatim transcripts and experts relied
more on domain specific background knowledge and experience with ATC
phraseology to code ATC communications. If a researcher elects to use
the ATSAT, we recommend that all coders receive the same orientation

and instruction sessions prior to using the it. (AN)

AN (1) AD-A295 027/XAG

FG (2) 050900
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Convention of the TRACON Operations Concepts Database into a Formal
Sentence Outline Job Task Taxonomy.

DN (9) Final rept.

AU (10) Rodgers, Mark D.
Drechsler, Gena K.

RD (11) May 1995

PG (12) 67 Pages

RS (14) DOT/FAA/AM-95/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *JOBS, *AIR TRAFFIC CONTROL SYSTEMS

DATA BASES, REQUIREMENTS, TRAINING, INTERFACES, TEAMS(PERSONNEL),
LANGUAGE, USER NEEDS, WORDS(LANGUAGE), MANAGEMENT PERSONNEL,
PERSONNEL,
QUALITY ASSURANCE, SPECIALISTS, AWARENESS, TAXONOMY, INFORMATION
PROCESSING, ABBREVIATIONS

AB (27) FAA Air Traffic Control Operations Concepts Volume VIII: TRACON
Controllers (1989) developed by CTA, Inc., a technical description of
the duties of a TRACON air traffic control specialist (ATCS), formatted
in User Interface Language, was restructured into a hierarchical formal
sentence outline. To ensure that none of the meaning associated with a
task or task element was lost during the conversion, the revised
document was reviewed by subject matter experts (SMEs) consisting of
four groups of six TRACON controllers and four quality assurance
managers. SMEs looked for words, phrases, or acronyms not commonly used
by TRACON controllers, and illogical sequencing of duties described in
the document. Appropriate suggestions for change were implemented into
the document before the next review. Six- hundred seventy-one changes
were made to the document, with only seven of these changes made during
the final review, confirming that an improved document resulted from
the research. The restructured document is intended to assist in the
identification of situation awareness information requirements.
However, an easily understood, detailed description of duties performed
by a TRACON ATCS has potential not only for use by researchers
interested in TRACON ATCS tasks, but also by quality assurance

investigation teams and training personnel.

AN (1) AD-A295 131/XAG

FG (2) 010300
060500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) Alternative Methods for Flotation Seat Cushion Use.

DN (9) Final rept.

AU (10) Funkhouser, Gordon E.
George, Mark H.

RD (11) May 1995

PG (12) 9 Pages

RS (14) DOT/FAA/AM-95/20

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FLOTATION, *CUSHIONING, *AIRCRAFT SEATS, *POSTURE(PHYSIOLOGY)
WATER, RESCUES, SURVIVAL(GENERAL), CLUSTERING, LOSSES, OCEANS,
HEAT,

SURVIVAL(PERSONNEL), ROUGHNESS, ADULTS, CHILDREN, VISUAL TARGETS,
CONSCIOUSNESS, CRASHES, HEAT LOSS, SEATS, PADS(CUSHIONS), BODY
TEMPERATURE

ID (25) *SEAT CUSHIONS

AB (27) Alternative methods of using flotation seat cushions for water crash
survivors were identified at the Civil Aeromedical Institute (CAM I).
These methods, tested in the CAMI survival tank and a theme park wave
pool, were: 1) two people facing each other, holding two cushions
between them; 2) two people facing each other, holding two cushions
between them, with a third person held between the two cushions; 3) two
people facing each other, holding their cushions on the other person's
back; 4) two people facing each other, holding their cushions on the
other person's back, with a third person held between the two people;
and 5) each person holding a cushion while interlocking arms with
adjacent survivors to form a large cluster. RESULTS: The first two
methods, using cushions held between two people, are beneficial when
linking-up is difficult because of rough seas and when heat loss is not
a problem. when seas are calm and the water is cold, the third and
fourth methods should retard loss of body heat. The fifth method, where
the survivors are clustered together, brings together and connects the
survivors who are using the other methods. The cluster allows for more
support and help for injured and unconscious survivors. Because
individuals tend to separate in the water, the cluster also presents a

large visual target for rescuers. Preliminary testing, using a small flotation dummy, suggests that the second method could be used to rescue children by placing them between the cushions held by adults.

AN (1) AD-A295 133/XAG

FG (2) 230600

010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) The Potential for Pulmonary Heat Injury Resulting from the Activation of a Cabin Water Spray System to Flight Aircraft Cabin Fires.

DN (9) Final rept.

AU (10) Garner, Robert P.

RD (11) May 1995

PG (12) 11 Pages

RS (14) DOT/FAA/AM-95/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FLIGHT CREWS, *WOUNDS AND INJURIES, *AIRCRAFT FIRES, *FIRE SUPPRESSION, *FIRE SAFETY, *AIRCRAFT CABINS

VOLUME, ACTIVATION, AIRCRAFT, RISK, HAZARDS, SMOKE, FLIGHT, SAFETY, AVIATION ACCIDENTS, LUNG, RESPIRATORY SYSTEM, PHYSIOLOGY,

TEMPERATURE

CONTROL, PATHOLOGY, HEAT, PASSENGERS, SPRAYS, ATMOSPHERES,

WATER

SUPPLIES, BURNS(INJURIES), PRESSURIZED CABINS

ID (25) CWSS(CABIN WATER SPRAY SYSTEM), THERMAL INJURY, RESPIRATORY SYSTEM

AB (27) A cabin water spray system (CWSS) has been suggested as a means of attenuating the severity of smoke and fire commonly associated with aircraft accidents. All aspects of passenger and cabin safety must be considered when evaluating a new safety system or concept. The purposes of this report are to briefly review the pathophysiological changes occurring in the respiratory system as a result of thermal injury and to quantitatively estimate the risk of creating a more hazardous cabin environment by activation of CWSS. Changes in the heat content of the cabin atmosphere resulting from CWSS activation were calculated using parameters consistent with current aircraft and proposals for CWSS design. The results suggest that only a very small volume of the aircraft cabin would have an increase in heat content that could result in thermal injury.

AN (1) AD-A295 220/XAG

FG (2) 230200

010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Human Factors Evaluation of the Operational Demonstration Flight Inspection Aircraft.

DN (9) Final rept.

AU (10) Rodgers, Mark D.

RD (11) May 1995

PG (12) 26 Pages

RS (14) DOT/FAA/AM-95/18

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *HUMAN FACTORS ENGINEERING

DEMONSTRATIONS, PILOTS, RESEARCH FACILITIES, AERONAUTICS, FLIGHT, MISSIONS, INSPECTION, DATA ACQUISITION, STANDARDS, WORK STATIONS, LABORATORIES, ANTHROPOMETRY, AIRCRAFT NOISE, AIRCRAFT CABINS

ID (25) FLIGHT INSPECTIONS

AB (27) These reports describe the data collection and analysis efforts performed by the Civil Aeromedical Institute's Human Factors Research Laboratory to assist the Office of Aviation System Standards (AVN) in the human factors evaluation of the Operational Demonstration (Ops Demo) candidate flight inspection aircraft (FIA). Although there was not sufficient time to conduct an exhaustive human factors evaluation of the Ops Demo FIA, several efforts were undertaken to assist in the determination of the suitability of the proposed aircraft for integration of flight inspection equipment and performance of the flight inspection mission. These efforts included an evaluation of flight inspection pilot and technician preferences for certain aircraft characteristics, an evaluation of aircraft cabin noise levels, an anthropometric familiarization for flight inspection pilots and technicians participating in the Ops Demo, and an evaluation of the proposed flight inspection workstation design for the medium-size, medium-range (MSR) aircraft.

AN (1) AD-A295 511/XAG

FG (2) 010300

060500

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Potential for Pulmonary Heat Injury Resulting from the Activation of a Cabin Water Spray System to Fight Aircraft Cabin Fires.

DN (9) Final rept.

AU (10) Garner, Robert P.

RD (11) May 1995

PG (12) 11 Pages

RS (14) DOT/FAA/AM-95/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RESPIRATORY SYSTEM, *WOUNDS AND INJURIES, *AIRCRAFT FIRES, *BURNS(INJURIES), *AIRCRAFT CABINS VOLUME, ACTIVATION, AIRCRAFT, RISK, HAZARDS, SMOKE, SAFETY, AVIATION ACCIDENTS, LUNG, PHYSIOLOGY, PATHOLOGY, HEAT, PASSENGERS, SPRAYS, ATMOSPHERES, WATER SUPPLIES, HEAT STRESS(PHYSIOLOGY),

PRESSURIZED

CABINS

AB (27) A cabin water spray system (CWSS) has been suggested as a means of attenuating the severity of smoke and fire commonly associated with aircraft accidents. All aspects of passenger and cabin safety must be considered when evaluating a new safety system or concept. The purposes of this report are to briefly review the pathophysiological changes occurring in the respiratory system as a result of thermal injury and to quantitatively estimate the risk of creating a more hazardous cabin environment by activation of CWSS. Changes in the heat content of the cabin atmosphere resulting from CWSS activation were calculated using parameters consistent with current aircraft and proposals for CWSS design. The results suggest that only a very small volume of the aircraft cabin would have an increase in heat content that could result in thermal injury.

AN (1) AD-A295 542/XAG

FG (2) 050800

050900

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Shift Work, Age, and Performance: Investigation of the 2-2-1 Shift Schedule Used in Air Traffic Control Facilities 1. The Sleep/Wake Cycle.

DN (9) Final rept.

AU (10) Della Rocco, Pamela S.

Cruz, Crystal E.

RD (11) May 1995

PG (12) 30 Pages

RS (14) DOT/FAA/AM-95/19

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *SCHEDULING, *WAKE, *AIR TRAFFIC CONTROLLERS, *SLEEP ENVIRONMENTS, SYNTHESIS, COMPARISON, COGNITION, CYCLES, TIME, VARIATIONS, CAREERS, SHIFTING, PATTERNS, DAY, FATIGUE, RATINGS, MONITORS, ROTATION, WRIST

AB (27) Air Traffic Control Specialists (ATCS) work rotating shift schedules for most of their careers. Specifically, many work a counterclockwise rotating shift schedule, called the 2-2-1, or some variation of the schedule. The 2-2-1 involves rotating from two afternoon shifts to two mornings and, finally, to a midnight shift over the course of one work week. The purpose of the present study was to investigate sleep patterns during this type of rotating shift and the potential cumulative partial sleep loss in a laboratory-based synthetic work environment. Four groups of five male subjects between the ages of 30 to 35 (n=10) and 50 to 55 (n=10) participated in the four week study. Subjects were screened on medical and cognitive criteria. The Multiple Task Performance Battery (MTPB) was utilized to provide a motivating synthetic work environment. Subjects were asked to work three 2-hour sessions on the MTPB per eight hour day for the last three weeks of the protocol. During the second and fourth weeks, subjects worked day shift (0800-1630). During the third week, subjects worked the 2-2-1 schedule. Sleep duration and quality, as well as mood, sleepiness and fatigue ratings were reported in log books. Wrist activity monitors were used to verify sleep duration. Average sleep durations decreased over the week of the 2-2-1 from an average of 7.6 hours, on Sunday night prior to the first afternoon shift, to 3.0 hours just prior to the midnight shift. Comparison of sleep duration for the first week of day shifts.

AN (1) AD-A295 813/XAG

FG (2) 170900

230600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Mode S Beacon System Terminal Configuration Performance Test Report.

DN (9) Technical note
AU (10) Alimenti, Raymond J.
RD (11) May 1995
PG (12) 130 Pages
RS (14) DOT/FAA/CT-TN95/7
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *TARGET DETECTION, *SEARCH RADAR, *BEACONS
DEGRADATION, PROBABILITY, AIRCRAFT DETECTION, DATA LINKS, AZIMUTH,
SURVEILLANCE, RADIOFREQUENCY, FALSE TARGETS, JITTER
AB (27) This document reports the findings of the performance tests conducted
on the terminal configuration of the Node S Beacon System. The tests
were conducted at the FAA Technical Center using the first article
system from the Node S production contract. The Node S system under
test was a fully configured dual channel system having all required
external interfaces connected to actual NAS equipment. A combination
of live aircraft and simulated targets were used in the test conduct
and data collection. The tests were conducted in accordance with the
Node S Naster Test Plan (DoTIFAA/CT-88128) and the Node S Performance
Test Plan (DOTIFAA/CT-Th 90124). The test goals are to characterize the
performance of the Node S system in key areas and to establish a
baseline from which to evaluate future changes.

AN (1) AD-A296 578/XAG

FG (2) 050800

050900

061000

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

**TI (6) Shift Work, Age, and Performance: Investigation of the 2-2-1 Shift
Schedule Used in Air Traffic Control Facilities. 1. The Sleep/Wake
Cycle.**

AU (10) Della Rocco, Pamela S.

RD (11) May 1995

PG (12) 30 Pages

RS (14) DOT/FAA/AM-95/19

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *EXPOSURE(PHYSIOLOGY), *SLEEP
CYCLES, CONTROL CENTERS, WAKE

ID (25) SLEEP WAKE CYCLE

AB (27) Because Air Traffic Control (ATC) operations require 24-hour per day

staffing, Air Traffic Control Specialists (ATCS), in many cases, are
faced with shift work throughout their careers. ATCSs in the United
States work a relatively unique rapidly rotating shift schedule, the
"2-2-1" (Price & Holley, 1990), as well as a variety of schedule
modifications based upon a backward or counterclockwise rotation of
shifts. Problems associated with shift work in other populations could
be expected to be found in the ATCS population. These include issues
related to health, family, life styles, sleep patterns, performance on
the night shift, and stress (Moore-Ede, Czeisler, & Richardson, 1983;
U.S. Congress, Office of Technology Assessment OTA, 1991). The sources
of stress include sleep deprivation, circadian rhythm disruption, and
disruption of social interactions (Scott & LaDou, 1990). Each of these
factors has implications for job performance. Because of the
safety-related nature of the ATCS's job, assessing and understanding
the factors that potentially affect job performance, and the manner in
which they interact and change with age, is critical. The 2-2-1
schedule was the focus of this research.

AN (1) AD-A299 091/XAG

FG (2) 120700

170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

**TI (6) Conversion of the TRACON Operations Concepts Database into a Formal
Sentence Outline Job Task Taxonomy.**

DN (9) Final rept.

AU (10) Rodgers, Mark D.

Drechsler, Gena K.

RD (11) May 1995

PG (12) 67 Pages

RS (14) DOT/FAA/AM-95/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DATA BASES, *SYSTEMS ANALYSIS, *AIR TRAFFIC CONTROLLERS,
*TAXONOMY

CONVERSION, REQUIREMENTS, JOBS, TRAINING, PERFORMANCE(HUMAN),
INTERFACES, TEAMS(PERSONNEL), AIR TRAFFIC CONTROL SYSTEMS, HUMAN
FACTORS ENGINEERING, USER NEEDS, WORDS(LANGUAGE), MANAGEMENT
PERSONNEL,

QUALITY ASSURANCE, AWARENESS, INFORMATION PROCESSING,
ABBREVIATIONS

ID (25) TRANCON(TERMINAL RADAR APPROACH CONTROL)

AB (27) FAA Air Traffic Control Operations Concepts Volume VIII: TRACON Controllers (1989) developed by CTA, Inc., a technical description of the duties of a TRACON air traffic control specialist (ATCS), formatted in User Interface Language, was restructured into a hierarchical formal sentence outline. To ensure that none of the meaning associated with a task or task element was lost during the conversion, the revised document was reviewed by subject matter experts (SMEs) consisting of four groups of six TRACON controllers and four quality assurance managers. SMEs looked for words, phrases, or acronyms not commonly used by TRACON controllers, and illogical sequencing of duties described in the document. Appropriate suggestions for change were implemented into the document before the next review. Six-hundred-seventy-one changes were made to the document, with only seven of these changes made during the final review, confirming that an improved document resulted from the research. The restructured document is intended to assist in the identification of situation awareness information requirements. However, an easily understood, detailed description of duties performed by a TRACON ATCS has potential not only for use by researchers interested in TRACON ATCS tasks, but also by quality assurance investigation teams and training personnel.

AN (1) AD-A299 429/XAG

**FG (2) 010300
230200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Human Factors Evaluation of the Operational Demonstration Flight Inspection Aircraft.

DN (9) Final rept.

AU (10) Rodgers, Mark D.

RD (11) May 1995

PG (12) 26 Pages

RS (14) DOT/FAA/AM-95/18

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *HUMAN FACTORS ENGINEERING, *INSPECTION DEMONSTRATIONS, PILOTS, AERONAUTICS, FLIGHT, MISSIONS, DATA ACQUISITION, STANDARDS, WORK STATIONS, AIRCRAFT NOISE, AIRCRAFT CABINS

AB (27) These reports describe the data collection and analysis efforts performed by the Civil Aeromedical Institute 5 Human Factors Research Laboratory to assist the Office of Aviation System Standards (AVN) in

the human factors evaluation of the Operational Demonstration (Ops Demo) candidate flight inspection aircraft (FIA). Although there was not sufficient time to conduct an exhaustive human factors evaluation of the Ops Demo FIA, several efforts were undertaken to assist in the determination of the suitability of the proposed aircraft for integration of flight inspection equipment and performance of the flight inspection mission. These efforts included an evaluation of flight inspection pilot and technician preferences for certain aircraft characteristics, an evaluation of aircraft cabin noise levels, an anthropometric familiarization for flight inspection pilots and technicians participating in the Ops Demo, and an evaluation of the proposed flight inspection workstation design for the medium-size, medium-range (MSR) aircraft.

AN (1) AD-A299 624/XAG

**FG (2) 230600
130400**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL
INST**

TI (6) Alternative Methods for Flotation Seat Cushion Use.

DN (9) Final rept.

AU (10) Funkhouser, Gordon E.
George, Mark H.

RD (11) May 1995

PG (12) 9 Pages

RN (18) DOT/FAA/AM-95/20
XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *RESCUES, *FLOTATION, *SEATS, *CUSHIONING, *PADS(CUSHIONS) WATER, SURVIVAL(GENERAL), CLUSTERING, LOSSES, OCEANS, HEAT, SURVIVAL(PERSONNEL), ROUGHNESS, ADULTS, CHILDREN, VISUAL TARGETS, CONSCIOUSNESS, CRASHES, HEAT LOSS, BODY TEMPERATURE

ID (25) FLOTATION SEAT CUSHIONS, DITCHING, HYPOTHERMIA, CABIN SAFETY, WATER
SURVIVAL

AB (27) Alternative methods of using flotation seat cushions for water crash survivors were identified at the Civil Aeromedical Institute (CAMI). These methods, tested in the CAMI survival tank and a theme park wave pool were: (1) two people facing each other, holding two cushions between them; (2) two people facing each other, holding two cushions between them, with a third person held between the two cushions; (3) two people facing each other, holding their cushions on the other

person's back; (4) two people facing each other, holding their cushions on the other person's back, with a third person held between the two people; and (5) each person holding a cushion while interlocking arms with adjacent survivors to form a large cluster. RESULTS: The first two methods, using cushions held between two people, are beneficial when linking-up is difficult because of rough seas and when heat loss is not a problem. when seas are calm and the water is cold, the third and fourth methods should retard loss of body heat. The fifth method, where the survivors are clustered together, brings together and connects the survivors who are using the other methods. The cluster allows for more support and help for injured and unconscious survivors. Because individuals tend to separate in the water, the cluster also presents a large visual target for rescuers. Preliminary testing, using a small flotation dummy, suggests that the second method could be used to rescue children by placing them between the cushions held by adults.

AN (1) AD-A302 727/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Los Angeles International Airport Instrument Landing System Approach. Phase 2 and 3.

DN (9) Final test rept. Jan-Jul 92

AU (10) Di Meo, K.
Melville, B.

RD (11) May 1995

PG (12) 90 Pages

RS (14) DOT/FAA/CT-93/61

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS, *APPROACH

COMPUTATIONS, MODELS, MONITORING, THRESHOLD EFFECTS, AIRPORT RADAR

SYSTEMS, NAVIGATION, ERRORS, SYNCHRONISM, AZIMUTH, RUNWAYS, SEARCH

RADAR, CORRECTIONS, TRACKS

AB (27) This report describes the methodology and results of Phase 2 and 3 of a four-phase program. The objective of the four-phase program is to measure and model navigational performance of aircraft making Instrument Landing System (ILS) approaches at distances from 10 to 32 nautical miles from the runway threshold. Navigation of the localizer at these distances is envisioned for simultaneous instrument approaches into parallel triple and quadruple runways. Knowledge of navigational

performance will facilitate evaluation of triple and quadruple approach concepts and may identify ways to reduce Total Navigational System Error, which, in turn, may make triple and quadruple approach concepts more viable. The objective of Phase 2 was to quantify the bias in airport surveillance radar (ASR)-9 target position reports, and to provide correction factors to account for this bias in the Phase 1 calculation of cross-track deviation (CTD). The objective of Phase 3 was to determine the location of the ILS localizer course centerline (CL), half-scale, and full-scale course deviation indicator signals relative to the extended runway centerline, and to provide data on localizer CL location for use in Phase 1 CTD calculations.

AN (1) AD-A294 159/XAG

FG (2) 050800

061000

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Sleep Patterns in Air Traffic Controllers Working Rapidly Rotating Shifts: A Field Study.

DN (9) Final rept.

AU (10) Cruz, Crystal E.
Della Rocco, Pamela S.

RD (11) Apr 1995

PG (12) 18 Pages

RS (14) DOT/FAA/AM-95/12

RN (18) XF-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *EXPOSURE(PHYSIOLOGY), *SLEEP CYCLES, TIME, QUALITY, SCHEDULING, SHIFTING, WAKE, PATTERNS, DAY,

DRIVES, RATINGS, ROTATION, AIR TRAFFIC CONTROLLERS

ID (25) SLEEP PATTERNS, SLEEP WAKE CYCLE, SLEEP QUALITY

AB (27) This study was part of a research program in shift work and fatigue in the Air Traffic Control (ATC) environment. The purpose of the study was to investigate three different shift schedules in use at ATC facilities with respect to potential disruption of the sleep/wake cycle. A straight day schedule of early morning shifts (i.e., beginning before 0800), and two variations of counterclockwise, rapidly rotating shift schedules, the 2-2-1 and 2-1-2, were analyzed in terms of total sleep time, asleep and awake times, and subjective ratings of sleep quality and sleepiness. Data were collected in daily logbooks by air traffic control specialists (ATCSs) Total sleep time on the 2-2-1 schedule

showed a characteristic decline from approximately 8 hours before the two afternoon shifts, to 5 hours before the two early morning shifts, to 2.4 hours before the midnight shift. Total sleep time on the 2-1-2 schedule decreased from 7.5-8 hours before the two afternoon shifts and one midday shifts to approximately 6 hours before the two early morning shifts. Total sleep time on the straight day shift schedule was approximately 6 hours for each day of the week. The least amount of sleep was obtained before early morning shifts in all of the schedules and before the midnight shift in the 2-2-1 schedule. Disruptions in the timing of sleep were limited to changes in the timing of waking up associated with rotations into the early morning shifts for the 2-2-1 and 2-1-2 schedules and, of course, the afternoon sleep before the midnight shift. Neither subjective ratings of sleep quality or sleepiness were found to vary by schedule type. More high ratings of sleepiness on the drive home, however, were reported following the midnight shift than any other shift.

AN (1) AD-A294 560/XAG

**FG (2) 060400
010500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Practical Color Vision Tests for Air Traffic Control Applicants: En route Center and Terminal Facilities.

DN (9) Final rept.

AU (10) Mertens, Henry W.
Milburn, Nelda J.
Collins, William E.

RD (11) Apr 1995

PG (12) 15 Pages

RS (14) DOT/FAA/AM-95/13

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COLOR VISION TEST AND EVALUATION, AIRCRAFT, COMPUTERS, MATERIALS, COMPARISON, FACILITIES, RED(COLOR), LIGHT, AERONAUTICS, RELIABILITY, FLIGHT, COLORS, DEFICIENCIES, SAFETY, NIGHT, STIMULI, SPECIALISTS, PRINTING, BLACK(COLOR), SPECTRORADIOMETERS, SIGNAL LIGHTS, HANDWRITING,

COLOR

CODING, REPRODUCTION(COPYING)

AB (27) Two practical color vision tests were developed and validated for use in screening Air Traffic Control Specialist (ATCS) applicants for work

at en route center or terminal facilities. The development of the tests involved careful reproduction/simulation of color-coded materials from the most demanding, safety critical color task performed in each type of facility. The tests were evaluated using 106 subjects with normal color vision and 85 with color vision deficiency. The en route center test, named the Flight Progress Strips Test (FPST), required the identification of critical red/black coding in computer printing and handwriting on flight progress strips. The terminal option test, named the Aviation Lights Test (ALT), simulated red/green/white aircraft lights that must be identified in night ATC tower operations. Color coding is a non-redundant source of safety-critical information in both tasks. The FPST was validated by direct comparison of responses to strip reproductions with responses to the original flight progress strips. Validity was high; Kappa=.91. The light point stimuli of the ALT were validated physically with a spectroradiometer. The test lights met the FAA and ICAO standards for colors of aircraft and aviation signal lights. The reliabilities of the FPST and ALT were estimated with Chronbach's alpha and were .93 and .98, respectively. The high job-relevance, validity, and reliability of these tests increases the effectiveness and fairness of ATCS color vision testing.

AN (1) AD-A296 159/XAG

**FG (2) 130400
150500
210400**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Vertical Drop Test of a Narrow-Body Fuselage Section with Overhead Stowage Bins and Auxiliary Fuel Tank System on Board.

DN (9) Final rept. Oct 93-Sep 94

AU (10) Logue, Thomas V.
Mcguire, Robert J.
Reinhardt, Robert J.
Vu, John W.
Vu, Tong V.

RD (11) Apr 1995

PG (12) 147 Pages

RS (14) DOT/FAA/CT-94/116

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FUSELAGES, *DROP TESTS, *FUEL TANKS, *STORAGE REQUIREMENTS, FUEL SYSTEMS, AUXILIARY, ENVIRONMENTS, IMPACT,

SURVIVABILITY, DYNAMICS, MASS, DYNAMIC RESPONSE,
FRACTURE(MECHANICS),
VERTICAL ORIENTATION, RESPONSE, DYNAMIC LOADS, SUPPORTS,
TRANSPORT

AIRCRAFT, STATICS, ONBOARD, STRUCTURAL COMPONENTS

ID (25) STOWAGES

AB (27) In October 1993 the FAA Technical Center conducted a vertical drop test of a narrow- body fuselage section. This test was structured to determine the impact response characteristics of some typical items of mass found aboard transport airplanes to assess the adequacy of the design standards and regulatory requirements for those components. A primary objective of this test was to determine the dynamic response characteristics of the onboard overhead stowage bins and auxiliary fuel tank system, as well as the fuselage section itself, when subjected to a potentially survivable impact. The dynamic impact environment and the resultant response of the onboard overhead stowage bins and auxiliary fuel tank system were characterized. The structural support reactions for those onboard items of mass were measured and compared to predicted values which were based on static analyses and tests. The test was intentionally structured to impose a dynamic load condition in excess of the current design and certification requirements for the onboard items of mass so that the dynamic fracture loads and modes of fracture for those components could also be determined and evaluated.

AN (1) AD-A299 128/XAG

FG (2) 070200

070300

130600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) **The Use of Automotive Glycol Antifreeze Test Strips for Determining the
Freeze Point Glycol-Based Aircraft Deicing Fluid.**

DN (9) Technical note

AU (10) Pugacz, Edward J.
Masters, Charles O.

RD (11) Apr 1995

PG (12) 19 Pages

RS (14) DOT/FAA/CT-TN95/24

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *FREEZING, *AUTOMOTIVE VEHICLES, *ANTIFREEZES,
*GLYCOLS,

*DEICING SYSTEMS

TEST AND EVALUATION, WATER, FLUIDS, CONCENTRATION(CHEMISTRY),
REFRACTOMETERS

ID (25) TEST STRIPS

AB (27) This Technical Note documents a series of tests performed to determine the accuracy of automotive glycol antifreeze test strips when used measure to the freeze point of glycol-based deicing and anti-icing fluids. Also employed in the tests was a refractometer, the currently accepted method used to determine de/anti-icing fluid freeze points. Varying concentrations of water and de/anti-icing fluid were used to provide a variety of test freeze points. The results of the two freeze point measurement methods are compared and discussed, and a recommendation made. jg p.3

AN (1) AD-A293 223/XAG

FG (2) 040200

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) **Offshore Next Generation Weather Radar (NEXRAD) OT&E Integration and
OT&E Operational Test.**

DN (9) Final rept.

AU (10) Martinez, Radame
Stretcher, Baxter
Porcello, John
Guthlein, Peter
Diviney, William

RD (11) Mar 1995

PG (12) 83 Pages

RS (14) DOT/FAA/CT-TN95/10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR, *OFFSHORE

TEST AND EVALUATION, UNITED STATES GOVERNMENT, TEST EQUIPMENT,
AERONAUTICS, SCHEDULING, CONFIGURATIONS, DATA ACQUISITION,
REDUNDANCY,
HAWAII

ID (25) NEXRAD(NEXT GENERATION WEATHER RADAR), UCP(UNIT CONTROL
POSITION)

AB (27) This document is the Final Report for Phase I limited Operational Test and Evaluation (OT&E) Integration and OT&E Operational testing of the first Federal Aviation Administration (FAA) redundant configuration Next Generation Weather Radar (NEXRAD) installed in Kauai, Hawaii, and provides an account of the results of OT&E testing, including

recommendations for future considerations. This report provides background information on the Offshore NEXRAD system. In addition, the report contains a description of testing and evaluation including information about the test schedule and location test participants, specialized test equipment used during testing, test objectives/criteria, test descriptions, test results, and methods used for data collection and analysis. The report continues with a comprehensive discussion of overall test results, including Critical Operational Issues (C 01) and their resolution. Finally, the report ends with test conclusions and recommendations to improve system performance.

AN (1) AD-A293 251/XAG

FG (2) 010500
040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Terminal Doppler Weather Radar (TDWR) Build 5B Operational Test and Evaluation (OT& E) Integration and OT& E Operational Test Plan.

DN (9) Technical note.

AU (10) Martinez, Radame
Viveiros, Steven
Wedge, Donne
Guthlein, Peter

RD (11) Mar 1995

PG (12) 61 Pages

RS (14) DOT/FAA/CT-TN94-59

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DOPPLER RADAR, *METEOROLOGICAL RADAR, *METEOROLOGICAL DATA, *WIND

SHEAR, *DATA DISPLAYS

TEST AND EVALUATION, HAZARDS, TERMINAL FLIGHT FACILITIES, AIR SPACE, GEOGRAPHY, TERMINALS

ID (25) TDWR(TERMINAL DOPPLER WEATHER RADAR), LLWAS(LOW LEVEL WIND SHEAR ALERT

SYSTEM), GSD(GEOGRAPHIC SITUATION DISPLAYS), RDT(RIBBON DISPLAY TERMINALS), MSIA(MICROBURST SHEAR INTEGRATION ALGORITHM), MDA(MICROBURST DETECTION ALGORITHM), NAS(NATIONAL AIRSPACE SYSTEM)

AB (27) The Terminal Doppler Weather Radar (TDWR) Build 5B Enhancement Operational Test and Evaluation (OT&E) Integration and OT&E Operational Test Plan provides the overall philosophy and approach to Build 5B OT&E

testing, and identifies OT&E objectives, responsibilities, and resources. The TDWR build 5B Enhancement provides connectivity to the Low Level Wind Shear Alert System (LLWAS) III to display LLWAS III data along with TDWR hazardous weather data on TDWR Geographic Situation Displays (GSD) and Ribbon Display Terminals (RDT). The TDWR Build 5B OT&E is scheduled to occur at the TDWR sites in Denver, CO, November and December 1994, and in Orlando, FL, spring 1995.

AN (1) AD-A293 308/XAG

FG (2) 010300
090100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Electrical Short Circuit and Current Overload Tests on Aircraft Wiring.

DN (9) Technical note

AU (10) Cahill, Patricia

RD (11) Mar 1995

PG (12) 13 Pages

RS (14) DOT/FAA/CT-TN94/55

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT EQUIPMENT

TEST AND EVALUATION, AIRCRAFT, COMMERCIAL AIRCRAFT, MATERIALS, WIRE,

ELECTRICAL PROPERTIES, IGNITION, FIRES, CIRCUITS, SHORT CIRCUITS, TRANSPORT AIRCRAFT, OVERLOAD, THERMAL DEGRADATION, FAULTS,

METALLURGY,

FLAMMABILITY, CIRCUIT BREAKERS

AB (27) This document describes the electrical short circuit and current overload tests that were conducted on wires used in commercial transport category aircraft. This testing was conducted to evaluate the fire potential that may result from electrical faults. Results of this testing showed that circuit breakers provide reliable overcurrent protection and that circuit breakers may not protect wire from ticking faults but can protect wire from direct shorts. It also showed that circuit breakers may not safeguard against the ignition of flammable materials by ticking faults. Preliminary testing also indicated that direct short circuits are not likely to start a fire and that direct short circuits do not erode insulation and conductors to the same degree that ticking faults do. Current overload testing that resulted in complete thermal degradation of the wire was also conducted to compare it with a fire-exposed wire. No differences were seen; however, the conductor of the wire

subjected to the fire was more brittle than the current overloaded wire. Further testing along with metallurgical evaluation would be necessary to substantiate this finding fully.

AN (1) AD-A293 407/XAG

FG (2) 060700
060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) An Assessment of Aviation Accident Risk of Aphakic Civil Airmen By Class of Medical Certificate Held and by Age: 1982-1985.

DN (9) Final rept.

AU (10) Nakagawara, Van B.
Montgomery, Ronald W.
Wood, Kathryn J.

RD (11) Mar 1995

PG (12) 13 Pages

RS (14) DOT/FAA/AM-95/11

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *EYE, *MEDICAL SERVICES, *LASER DAMAGE DATA BASES, FREQUENCY, UNITED STATES GOVERNMENT, RISK, AIR, PILOTS, RATES, POPULATION, AIR FORCE PERSONNEL, MEDICINE, CIVIL AVIATION, STATISTICAL ANALYSIS, RECORDS, PHYSICIANS, SURGERY, AVIATION PERSONNEL,

LENSES, IMPLANTATION, OPHTHALMOLOGY, ACCIDENTS, CATARACTS

ID (25) APHAKIC VISION

AB (27) In the FY-92/93 Annual Program Guidance and Current Policy Statement, the Federal Air Surgeon requested continued investigation of surgical procedures and ophthalmic devices, such as cataract surgery and artificial lens implants, as to their relevance to medical certification. No previous statistical studies of the aviation accident risk of civil airmen with aphakia and intraocular lens (IOL) by class of Federal Aviation Administration (FAA) airman medical certificate held have been performed. We evaluated the accident frequency of aphakic airmen (with or without IOL) by effective class of medical certificate (first-, second-, third-class) and by age (< 50 and > 50 years) versus similarly stratified non-aphakic airman populations for the period 1982-85. Medical records were evaluated for all certified airmen during the study period who were carrying FAA-specific pathology codes for aphakia and/or artificial lens implant. Aviation accident and active airman population frequencies were obtained from FAA databases

and used to calculate accident rates. Third-class total aphakia and IOL airmen and third-class aphakia and IOL airmen < 50 years of age had significantly higher ($p < .05$) accident rates compared to corresponding non-aphakic airman populations. Our findings suggest that medical impairment may be an important risk factor for aviation accidents.

AN (1) AD-A293 682/XAG

FG (2) 010200
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) FAA Aviation Forecasts, Fiscal Year 1995-2006.

RD (11) Mar 1995

PG (12) 243 Pages

RS (14) FAA-APO-95-1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *MILITARY AIRCRAFT, *MILITARY BUDGETS

CONTROL, STATIONS, STABILITY, AIRCRAFT, AIRCRAFT INDUSTRY, ECONOMICS,

GROWTH(GENERAL), FORECASTING, TOWERS, AERONAUTICS, COSTS, FUELS, FLIGHT, PLANNING, CIVIL AVIATION, DOMESTIC, AIRPORTS, AIR TRANSPORTATION, REVENUE SHARING

AB (27) This report contains the Fiscal Years 1995-2006 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities.

These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the major users of the National Aviation System: air carriers, air taxi/commuters, military, and general aviation. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public.

The outlook for the 12-year forecast period is for moderate economic growth, stable real fuel prices, modest inflation, and continued moderate to strong growth in the demand for aviation services. Based on these assumptions, aviation activity is forecast to increase by 19.7 percent at FAA towered airports (352 airports) and 26.0 percent at air route traffic control centers. The general aviation active fleet is forecast to decline by 0.8 percent during the forecast period but increased utilization (hours flown by aircraft) results in a 12.0 percent increase in general aviation hours flown during same period. Scheduled domestic revenue passenger miles (RPMs) are forecast to

increase 60.5 percent, scheduled international RPMs are forecast to increase by 97.2 percent, and regional/commuter RPMs are forecast to increase by 154.1 percent.

AN (1) AD-A293 808/XAG

FG (2) 040200
010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The ATC Operational Evaluation of the Prototype Integrated Terminal Weather System (ITWS) at Dallas/Fort Worth and Orlando Airports (May-September 1993).

DN (9) Final technical note

AU (10) Weiss, Thomas M.

RD (11) Mar 1995

PG (12) 119 Pages

RS (14) DOT/FAA/CT-TN95/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *METEOROLOGICAL DATA, *AVIATION SAFETY, *AIR TRAFFIC CONTROL TERMINAL

AREAS

TEST AND EVALUATION, INTEGRATED SYSTEMS, INFORMATION SYSTEMS, DEMONSTRATIONS, PROTOTYPES, OPERATIONAL EFFECTIVENESS, DISPLAY

SYSTEMS,

GUSTS, STORMS, CIVIL AVIATION, WEATHER STATIONS, AIRPORTS, AIR

TRAFFIC,

ALL WEATHER AVIATION, FRONTS(METEOROLOGY), WEATHER

COMMUNICATIONS

ID (25) ITWS(INTEGRATED TERMINAL WEATHER SYSTEM)

AB (27) The Integrated Terminal Weather System (ITWS) was developed by Massachusetts Institute of Technology/Lincoln Laboratory (MITILL). The ITWS processor acquires data from Federal Aviation Administration (FAA) and National Weather Service (NWS) weather sensors in the terminal area and provides an integrated set of safety and planning weather products to air traffic personnel. An operational evaluation of the ITWS functional prototype was performed from May through September, 1993 at Dallas/Fort Worth (DFW) and Orlando (MCO) airports. ITWS geographical situation displays (6 SD) were located both at DFW and MCO as well as the Fort Worth Air Route Control Center (ARTCCXZFW) and Jacksonville ARTCC (ZJX). The purpose of testing ITWS at these sites was to evaluate various technical and operational issues of IIWS weather products and their display and usability on the GSD. (AN)

AN (1) AD-A293 933/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Enhancing the Effects of Diversity Awareness Training: A Review of the Research Literature.

DN (9) Final rept.

AU (10) Myers, Jennifer G.

RD (11) Mar 1995

PG (12) 28 Pages

RS (14) DOT/FAA/AM-95/10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TRAINING, *ATTITUDES(PSYCHOLOGY), *AWARENESS

TEST AND EVALUATION, MEASUREMENT, RISK, OPERATIONAL EFFECTIVENESS,

PERSONNEL, WORK, BEHAVIOR, PSYCHOLOGY, BENEFITS, LEARNING, SCIENTIFIC

LITERATURE

ID (25) DIVERSITY

AB (27) The projected changes in the demographic makeup of the workforce were primary influences in the spread of diversity awareness training in the private and public sector. One approach to training aims at changing personal attitudes and values to effect positive changes in treatment of others different from oneself (especially protected groups) in the workplace. The effectiveness of training or other interventions that focus on changes in attitudes to change behavior has not been clearly demonstrated. Training interventions need to use a combination of methods or strategies before, during, and after training to enhance the measurable benefits received from diversity awareness training and avoid the potential for 'white male backlash' and psychological risk among participants. Implementation of a training evaluation plan and a research program for identifying characteristics of effective training are also necessary to enhance training effectiveness in the longer term.

AN (1) AD-A292 060/XAG

FG (2) 130800
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Longevity and Survival Analysis for a Cohort of Retired Airline Pilots.

DN (9) Final rept.

AU (10) Besco, Robert O.

Sangal, Satya P.

Nesthus, Thomas E.

Veronneau, Stephen J.

RD (11) Feb 1995

PG (12) 15 Pages

RS (14) DOT/FAA/AM-95/5

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *LIFE EXPECTANCY(SERVICE LIFE), *PILOTS, *SURVIVAL(GENERAL),

*RETIREMENT (PERSONNEL)

DATA BASES, FUNCTIONS, AIRCRAFT INDUSTRY, RISK, EXPOSURE(GENERAL),

FLIGHT CREWS, MONITORING, HEALTH, PROBABILITY, POPULATION,

COMMERCIAL

AVIATION, ESTIMATES, PROFILES, RETIREMENT, SAMPLING, PATTERNS, TABLES(DATA), ENGINEERS, MORTALITY RATE, LIFE TESTS

ID (25) COHORT ANALYSIS, LIFE TABLE METHOD, SURVIVAL PROBABILITY

AB (27) There is a popular belief in the aviation industry that retired pilots die at a younger age than the general population. If this belief is in fact, correct, research into the factors or events precipitating an early mortality among retired airline crew members could be of interest to the FAA. Few studies have addressed the question Do retired airline pilots die at a younger age than their 60 year-old counterparts in the U.S. population? Airline pilots reach the mandatory retirement age of 60 after an entire career of active health monitoring and maintenance required by the Federal Aviation Administration (FAA). In this study, a preliminary survey was made to determine the mortality and survival profile of retired pilots from a major U.S. airline. An initial sample of 2209 retired pilots and flight engineers was surveyed. Early and late retirees were dropped from the sample, leaving us with 1494 pilots who retired at age 60 between the study dates of April 1968 to July 1993. The Life Table Method was identified as the most suitable approach to analyze the pattern of mortality for this data set. Life Table analysis provides estimates of probabilities of surviving a given number of years after retirement. This technique allows subjects to enter (i.e., retire at age 60) or leave the study (i.e., die) at different points in time and it utilizes all the data on partial exposure to the risk of dying.

AN (1) AD-A292 324/XAG

FG (2) 050800

060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Some Performance Effects of Age and Low Blood Alcohol Levels on a Computerized Neuropsychological Test.

DN (9) Final rept.

AU (10) Schroder, David J.

Harris, Howard C., Jr.

Collins, William E.

Nesthus, Thomas E.

RD (11) Feb 1995

PG (12) 38 Pages

RS (14) DOT/FAA/AM-95/7

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PSYCHOLOGY, *ALCOHOLS, *BLOOD VOLUME

TEST AND EVALUATION, CONTROL, PERFORMANCE(ENGINEERING),

COGNITION,

AGING(PHYSIOLOGY), POPULATION, LOW LEVEL, INSTRUMENTATION,

COMPUTER

APPLICATIONS, CIVIL AVIATION, NEUROLOGY, AVIATION PERSONNEL, BLOOD, PLACEBOS

ID (25) *COMPUTERIZED NEUROPSYCHOLOGICAL TEST

AB (27) COGSCREEN is a computerized test battery developed for the Federal Aviation Administration as an airman neuropsychological screening instrument for cognitive functioning. This study explored a multifaceted application of the sensitivity of the battery to potential differences in performance capabilities, current civil aviation interest in the performance effects of low levels of blood alcohol, and the potential significance of age on cognitive performance. Nine of 11 basic COGSCREEN tests were used with 60 subjects divided into three age groups, 27-32, 42-47, and 57-62 years. Twelve subjects within each age category (N=36) comprise an alcohol group; 8 subjects within each age category (N=24) comprised a control group. Subjects were given four 30-minute sessions of training on the task battery during one afternoon and participated in experimental sessions on the next afternoon. Experimental sessions comprised a pre-drinking (baseline) and three post-drinking sessions targeted to breath alcohol (BrAC) levels of 0.04, 0.027, and 0.014% for the alcohol group; each control subject

received a placebo. The results yielded statistically significant age effects on 20 of 25 measures of performance across the 9 tasks for the pre-drinking sessions favoring the younger age group, using the entire subject population (N=60). An analysis using only the control subjects of age effects on 18 of the 25 measures of performance on both the baseline and the post-baseline sessions; whereas, the analysis the alcohol subjects (N=36) found significant age differences on 15 of 25 scores for the pre-drinking session and only 13, 11, and 10 of 25 on the post-drinking sessions respectively.

AN (1) AD-A292 919/XAG

**FG (2) 061100
010200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE**

TI (6) Aircraft Fires, Smoke Toxicity, and Survival. An Overview.

DN (9) Final rept.

AU (10) Chaturvedi, Arvind K.
Sanders, Donald C.

RD (11) Feb 1995

PG (12) 8 Pages

RS (14) DOT/FAA/AM-95/8

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TOXICITY, *SMOKE, *AIRCRAFT FIRES

DATA BASES, MATERIALS, GAS ANALYSIS, SURVIVAL(GENERAL), GASES,
SATURATION, COMBUSTION, AVIATION ACCIDENTS, INFLIGHT, ANIMALS,
LABORATORIES, INTERNATIONAL, CYANIDES, AVIATION SAFETY, HEMOGLOBIN,
TRANSPORT AIRCRAFT, AIR TRANSPORTATION, BLOOD COUNTS, CARBOXYLIC

ACIDS,

TOXICOLOGY, CRASHES, INCAPACITATION, BLOOD VOLUME, FIRE RESISTANT
MATERIALS, INHALATION, ACCIDENTS

AB (27) In-flight fires in modern aircraft are rare, but post-crash fires do occur. Cabin occupants frequently survive initial forces of such crashes but are incapacitated from smoke inhalation. According to an international study, there were 95 fire-related civil passenger aircraft accidents world-wide over a 26-year period, claiming 2400 lives. Between 1985-1991, about 16% (32) of all US transport aircraft accidents involved fire and 22% (140) of the deaths in these accidents resulted from fire/smoke toxicity. Our laboratory database (1967-1993) indicates that 360 individuals in 134 fatal fire-related civil aircraft (air carrier and general aviation) accidents had carboxyhemoglobin

saturation levels, with or without cyanide in blood, high enough to impair performance. Combustion toxicology is now moving from a descriptive to a mechanistic phase. Methods for gas analyses have been developed and combustion/animal-exposure assemblies have been constructed. Material/fire-retardant toxicity and interactions between smoke gases are being studied. Relationships between gas exposure concentrations, blood levels, and incapacitation onset are being established in animal models. Continuing basic research in smoke toxicity will be necessary to understand its complexities, and thus enhance aviation safety and fire survival chances.

AN (1) AD-A292 927/XAG

**FG (2) 170703
250200**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) User Benefits of Two-Way Data Link ATC Communications: Aircraft Delay
and Flight Efficiency in Congested En Route Airspace.**

DN (9) Final rept.

RD (11) Feb 1995

PG (12) 126 Pages

RS (14) DOT/FAA/CT-95/4

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *COMMUNICATIONS TRAFFIC, *AIR TRAFFIC CONTROL SYSTEMS, *DATA
LINKS

SIMULATION, AIRCRAFT, EFFICIENCY, FLIGHT, DELAY, USER NEEDS, BENEFITS,
MANNED

AB (27) This report documents a Federal Aviation Administration (FAA) study that was conducted to demonstrate and quantify user benefits associated with the implementation of two-way Data Link air traffic control (ATC) services. The study was supported by the FAA Data Link Program Office (AND-310). The manned simulation research was performed at the FAA Technical Center by the Data Link Branch (ACW-500) of the Communications/Navigation/Surveillance Service.

AN (1) AD-A292 961/XAG

**FG (2) 050900
010200
230200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

TI (6) Development of Qualification Guidelines for Personal Computer-Based Aviation Training Devices.

DN (9) Final rept.

AU (10) Williams, Kevin W.
Blanchard, Robert E.

RD (11) Feb 1995

PG (12) 28 Pages

RS (14) DOT/FAA/AM-95/6

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMPUTER PROGRAMS, *FLIGHT TRAINING, *FLIGHT SIMULATION
EDUCATION, HUMAN FACTORS ENGINEERING, QUALIFICATIONS,
MICROCOMPUTERS,

APPLIED PSYCHOLOGY, INSTRUCTIONS, LEARNING

AB (27) Recent advances in the capabilities of personal computers have resulted in an increase in the number of flight simulation programs made available as Personal Computer-Based Aviation Training Devices (PCATDs). The potential benefits of PCATDs have been recognized by researchers and software/hardware developers alike. The purpose of this report is twofold: (1) present a conceptual approach based upon human learning principles and available flight training data for use in the development and evaluation of PCATDs; and (2) provide a detailed technical plan for an initial effort to develop and test guidelines for assessing the use of PCATDs in a training curriculum of a flight school conducted in accordance with the regulations stated in FAR Part 141.

AN (1) AD-A293 741/XAG

FG (2) 010200

131200

070400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Chemical Options to Halons for Aircraft Use.

DN (9) Final rept.

AU (10) Tapscott, Robert E.

RD (11) Feb 1995

PG (12) 62 Pages

RS (14) DOT/FAA/CT-95/9

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *CHEMICAL REACTIONS, *AIRCRAFT FIRES, *FIRE
EXTINGUISHING

AGENTS

TEST AND EVALUATION, FIRE SUPPRESSION

ID (25) *HALONS

AB (27) This report contains summary of available fire suppression agents, their properties and applicability in the various aircraft applications. Classes of agents, with presently available agents listed, are recommended for use in the development of test protocols. The test protocol developed for a class of agents can be used, with minor modifications, to test all agents belonging to that class.

AN (1) AD-A293 745/XAG

FG (2) 210500

060300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Bird Ingestion into Large Turbofan Engines.

DN (9) Final rept.

AU (10) Banilower, Howard
Goodall, Colin

RD (11) Feb 1995

PG (12) 138 Pages

RS (14) DOT/FAA/CT-93/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TURBOFAN ENGINES, *DAMAGE, *AIRCRAFT ENGINES, *BIRDS
POSITION(LOCATION), COMMERCE, CORES, MANUFACTURING, THREATS,
PARAMETERS, RATES, FAN BLADES, FRACTURE(MECHANICS), FLIGHT,
WEIGHT,

ADVERSE CONDITIONS, ENGINES, POWER, LOSSES, STATISTICAL PROCESSES,
NUMBERS, AVIATION SAFETY, INGESTION(ENGINES), AIRPORTS, TRANSVERSE

AB (27) This final report contains findings from a study conducted by the Federal Aviation Administration (FAA) of bird ingestion into certain modern large high bypass turbofan engines. These engines were certificated to current FAA standards and are installed in A300, A310, A320, B747, E757, B767, DC10, and MD11 aircraft in commercial service worldwide. Data pertaining to 644 aircraft ingestion events were collected for the FAA during 1989-1991 by the principal engine manufacturers. Topics addressed in the report include characteristics of ingested birds (numbers, species, and weights), ingestion rates, airports, aircraft parameters (flight phase, altitude, speed, engine position), and ingestion events which pose a potential threat to aircraft safety (multiple-engines or birds, transverse fracture of fan blades, power loss). Using statistical methods, the data are

analyzed to determine the influence of flight phase (departure or arrival), bird weight, and bird numbers (single or multiple-bird), both separately and in combination, on overall engine damage, fan blade damage, core damage, and other adverse effects on flight. A summary of all pertinent data from each ingestion is included in an appendix.

AN (1) AD-A305 791/XAG

FG (2) 170703

250100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Ground Data Link VHF Airline Communications and Reporting System (ACARS) Preliminary Test Report.

DN (9) Technical note

AU (10) Rehmann, Albert

Mestre, Jose D.

RD (11) Feb 1995

PG (12) 35 Pages

RS (14) DOT/FAA/CT-TN95/66

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DATA LINKS, *MESSAGE PROCESSING, *VERY

HIGH FREQUENCY

TEST AND EVALUATION, GROUND LEVEL, PARAMETERS, STATISTICAL DATA,

RATES,

COMMERCIAL AVIATION, TRANSMITTANCE, ERRORS, THROUGHPUT,

COMMUNICATION

AND RADIO SYSTEMS, AIR TRAFFIC, SURFACE TO AIR, INTERVALS,

TABULATION

PROCESSES

ID (25) ACARS(AIRLINE COMMUNICATIONS AND REPORTING SYSTEM)

AB (27) An effort was conducted to determine actual ground to air, and air to ground performance of the Airline Communications and Reporting system (ACARS), Very High Frequency (VHF) Data Link System. Parameters of system throughput, error rates, and availability were measured by tabulating statistics of messages ranging from 2 to 150 bytes in length. The intervals of transmission were developed based on anticipated air traffic service (ATS) requirements for tactical air traffic control (ATC) messages and their associated replies. Overall, the average round trip message delay fell in the range of 10 to 20 seconds, with 5 out of approximately 2300 messages lost. Aeronautical Radio Inc. (ARINC) did not endorse these tests, indicating that the

Federal Aviation Administration (FAA) tests did not take advantage of the capabilities of the ACARS network which has been optimized for airline use.

AN (1) AD-A307 192/XAG

FG (2) 010300

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Zero Accidents. A Shared Responsibility. Aviation Safety Action Plan.

RD (11) 09 Feb 1995

PG (12) 69 Pages

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *SAFETY, *AVIATION SAFETY, *PASSENGERS, *SEATS

AIRCRAFT, DEFORMATION, COMMERCIAL AVIATION, AERONAUTICS, LEVEL(QUANTITY), RANGE(EXTREMES), AIR TRANSPORTATION, REGULATIONS, ACCIDENTS

ID (25) ZERO ACCIDENTS

AB (27) On January 9 and 10, 1995, more than 1,000 industry, Government, and union aviation officials met in Washington, D.C. in an unprecedented working session to address aviation safety. A wide range of safety improvements were recommended. Secretary Pena committed to develop an action plan within 30 days that would detail DOT and FAA's response to these issues. This plan clearly reflects the underlying theme of the conference: Aviation safety is a shared responsibility. In a renewed commitment to this shared responsibility: Airlines are taking immediate, voluntary action to establish a safety office reporting to the CEO of every airline; In 1996, FAA will publish new regulations that require an independent flight safety department at every airline operating aircraft with more than nine passenger seats; and In March 1995, FAA will publish new regulations that require one level of safety for all air carriers operating aircraft with more than nine passenger seats.

23

AN (1) AD-A290 944/XAG

FG (2) 010600

131200

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Review of Civil Aviation Fatal Accidents in Which 'Lost/Disoriented' Was a Cause/Factor: 1981-1990.

DN (9) Final rept.

AU (10) Collins, William E.

RD (11) Jan 1995

PG (12) 10 Pages

RS (14) DOT/FAA/AM-95/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *CIVIL AVIATION, *PHYSIOLOGICAL DISORIENTATION,

*ACCIDENT INVESTIGATIONS

FREQUENCY, WEATHER, HAZARDS, PILOTS, DEMOGRAPHY, SEARCHING, ADVERSE

CONDITIONS, FLIGHT INSTRUMENTS, RATINGS, LOSSES, BEHAVIOR, AVIATION SAFETY, NIGHT FLIGHT, GEOGRAPHY, AWARENESS

ID (25) FATAL ACCIDENTS

AB (27) The National Transportation Safety Board (NTSB) analyzes circumstances and data from civil aviation accidents and ascribes one or more causes and/or related factors to help explain each accident. Among the formally accepted NTSB categories of accident causation is one termed "lost/disoriented;" that term generally differs from "spatial disorientation" and refers more to a loss of geographic awareness and, perhaps, resulting confusion on the part of the pilot. The present study was undertaken to provide information regarding the circumstances surrounding these fatal general aviation accidents in recent years, and to define demographic and behavioral characteristics of the "lost/disoriented" pilots. Those reports were examined and analyzed in terms of type of accident, age and experience of pilots, actions of pilots, night or day, and other conditions. The computer search yielded a total of 120 accidents in which "lost/disoriented" was among the findings noted by investigators of general aviation accidents for the 10 - year period. Those accidents resulted in 169 fatalities. Related causes and circumstances associated with the accidents were analyzed and categorized. "Lost/disoriented" accident frequency for the 1981-90 period peaked at 22 fatal accidents in 1985 and declined steadily thereafter, 75% of the pilots had no instrument rating, 64% of the accidents were associated with adverse weather, and just over half occurred at night. Other analyses suggest that educational efforts should continue to emphasize proper flight planning and the flight hazards of adverse weather conditions so that the recently lowered rates of "lost/disoriented" accidents can be maintained or improved.

AN (1) AD-A290 951/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Visual Guidance Requirements for Global Positioning System Approaches.

DN (9) Technical rept.

AU (10) Katz, Eric

RD (11) Jan 1995

PG (12) 21 Pages

RS (14) DOT/FAA/CT-TN94/40

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *GLOBAL POSITIONING SYSTEM, *GUIDANCE, *VISUAL AIDS REQUIREMENTS, AIRCRAFT, VISUAL PERCEPTION, INSTRUMENT LANDINGS, LANDING, APPROACH

AB (27) This technical note presents a discussion of visual guidance requirements for supporting aircraft instrument approach and landing operations, as they are presently perceived, and addresses further the issue of future requirements in support of Global Positioning System (GPS) instrument approaches. Current instrument approach procedures and the various visual guidance systems required to support them are discussed along with a brief dissertation concerning the purpose of visual guidance system components. The GPS visual guidance requirements are analyzed in detail, and recommendations for supporting visual aids are provided.

AN (1) AD-A291 203/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Test and Evaluation (OT&E) Integration and Operational Test Procedures for Fixed Ground Antenna Radome (FGAR).

DN (9) Technical note

AU (10) Baker, Leonard

RD (11) Jan 1995

PG (12) 64 Pages

RS (14) DOT/FAA/CT-TN94/65

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ELECTROMAGNETIC INTERFERENCE, *RADOMES, *RADAR ANTENNAS TEST AND EVALUATION, GROUND LEVEL, MEASUREMENT, INTEGRATED SYSTEMS,

CONTRACTORS, TEST METHODS, OPERATIONAL EFFECTIVENESS, CONFIGURATIONS, INSPECTION, TEST FACILITIES, ACCEPTABILITY, FIELD CONDITIONS, RADAR BEACONS
ID (25) FGAR(FIXED GROUND ANTENNA RADOMES), RFIM(RADIO FREQUENCY INTERFERENCE MONITORING), ARSR(AIR ROUTE SURVEILLANCE RADAR), CAI(CONTRACTOR'S ACCEPTANCE INSPECTION), ERBIF(EN ROUTE BEACON TEST FACILITY)
AB (27) This document defines the Fixed Ground Antenna Radome (FGAR) integration and and operational test procedures that will be performed at the Federal Aviation Administration (FAA) Technical Center's En Route Beacon Test Facility (ERBTF) and field operational facilities. These test procedures will be performed following the Contractor's Acceptance Inspection (CAI). The test configurations and their associated interfaces will be required to operate in as near an operational environment as possible. The testing includes the use of a specially equipped Radio Frequency Interference Monitoring (RFIM) van to measure primary and secondary radar electromagnetic performance parameters and the En Route Mode Select Beacon System (Mode S) installed at the Technical Center's Elwood ERBTF. In addition, the FGAR operational characteristics will be evaluated from a user's standpoint.

AN (1) AD-A291 310/XAG
FG (2) 170900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Operational Test and Evaluation (OT&E) Integration and Operational Test Plan for Fixed Ground Antenna Radome (FGAR).
DN (9) Technical note
AU (10) Baker, Leonard H.
RD (11) Jan 1995
PG (12) 51 Pages
RS (14) DOT/FAA/CT-TN94/63
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *RADOMES, *RADAR ANTENNAS, *SEARCH RADAR, *RADAR BEACONS TEST AND EVALUATION, ELECTROMAGNETIC RADIATION, GROUND BASED, ANTENNA RADIATION PATTERNS, RADIOFREQUENCY, FALSE TARGETS
ID (25) FGAR(FIXED GROUND ANTENNA RADOMES), AN/FPS
AB (27) The Federal Aviation Administration (FAA) Fixed Ground Antenna Radome (FCAR) Operational Test and Evaluation (OT&E) Integration and Operational Test Plan is prepared by the Associate Program Manager for

Test (APMT). It defines the overall planning, test activities, and coordination associated with OT&E Integration and Operational testing required to ensure the project meets the requirements of the project specification and the system and subsystem requirements allocated to the project. The purpose of the FCAR project is to provide new, larger radomes for en route surveillance radars that require collocated Mode Select Beacon System (Mode S) installations. As a result of the FAA's program to implement Mode S, many existing en route surveillance radar radomes cannot accommodate the additional space required by the new Mode S antennas. The FGARs will provide an environmental enclosure for a variety of single or dual-face monopulse beacon phased array and en route surveillance radar installations. Installations will be comprised of an installation mix ranging from beacon-only-sites (BOS) to collocated beacon and en route surveillance radar sites. (MM)

AN (1) AD-A291 435/XAG
FG (2) 170900
010600
040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Offshore Next Generation Weather Radar (NEXRAD) Test and Evaluation Master Plan (TEMP).
DN (9) Technical note
AU (10) Martinez, Radame
Cranston, Robert
Porcello, John
RD (11) Jan 1995
PG (12) 49 Pages
RS (14) DOT/FAA/CT-TN94/48
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *DOPPLER RADAR, *METEOROLOGICAL RADAR TEST AND EVALUATION, ACCEPTANCE TESTS, REQUIREMENTS, MONITORING, ALASKA, OFF THE SHELF EQUIPMENT, AIR TRAFFIC CONTROL SYSTEMS, OPERATIONAL EFFECTIVENESS, WEATHER FORECASTING, REMOTE DETECTORS, CIVIL AVIATION, AVIATION SAFETY, REDUNDANCY, HAWAII, OFFSHORE, ACQUISITION RADAR
AB (27) This document provides the test philosophy and approach for the Offshore Next Generation Weather Radar (NEXRAD) Test and Evaluation Master Plan (TEMP). The NEXRAD differs from the typical Federal Aviation Administration (FAA) weather radar acquisition in that it is

jointly funded by the Department of Defense (DOD), the Department of Commerce (DOC), and the Department of Transportation (DOT). These three agencies chartered the Joint System Program Office (JSPO) to manage the NENRAD development and subsequent test programs. JSPO has deployed 70 single-channel radar systems across the continental United States (CONUS) The FAA is deploying NEXRAD systems at non-CONUS (offshore) locations such as Alaska, Hawaii, and the Caribbean. The FAA Offshore NEXRAD will have a redundant configuration and a Remote Monitoring Subsystem (EMS). A total of 14 Offshore NEXPADs will be procured under this acquisition: 3 in the Caribbean, 4 in Hawaii, and 7 in Alaska. Funding constraints will limit the acquisition to seven NEXRADs in the 1994-1995 timeframe. (AN)

AN (1) AD-A291 447/XAG

FG (2) 250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) UHF Low Density Radio Communications Link (LDRCL) Operational Test and Evaluation (OT&E) Integration and OT&E Operational Final Test Report.

DN (9) Technical note

AU (10) Melillo, Michael R.

RD (11) Jan 1995

PG (12) 39 Pages

RS (14) DOT/FAA/CT-TN94/56

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RADIO LINKS

TEST AND EVALUATION, DEPLOYMENT, SPECIFICATIONS, SITES, OFF THE SHELF

EQUIPMENT, OPERATIONAL EFFECTIVENESS, ELECTROMAGNETIC INTERFERENCE,

COMMERCIAL EQUIPMENT, COMMUNICATION AND RADIO SYSTEMS, LOW DENSITY,

ULTRAHIGH FREQUENCY, NEVADA

ID (25) LDRCL (LOW DENSITY RADIO COMMUNICATIONS LINK), ARSR (AIR ROUTE SURVEILLANCE RADAR), RCAG (REMOTE COMMUNICATIONS AIR TO GROUND), NAS (NATIONAL AIRSPACE SYSTEM)

AB (27) This report contains the results of the Operational Test and Evaluation (OT&E) Integration and OT&E Operational Testing of the Commercial-Off-The-Shelf (COTS) Low Density Radio Communications Link's (LDRCL) Ultra-High Frequency (UHF) radio system. The OT&E testing was accomplished by first testing the LDRCL equipment against its equipment specification (FAA-E-2853A), and then performing OT&E testing at the

key sites; Nina and Tonopah, Nevada. These tests prove that the UHF LDRCL equipment can fulfill its mission in the National Airspace System (NAS) and that it is suitable and effective. Based on the test results, it is concluded that the UHF LDRCL equipment is qualified for operational deployment.

AN (1) AD-A291 520/XAG

FG (2) 010300

010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Effect of Wear on Fire-Blocking Layer Material Effectiveness.

DN (9) Technical note

AU (10) Barrientos, J. M.

RD (11) Jan 1995

PG (12) 19 Pages

RS (14) DOT/FAA/CT-TN94/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMMERCIAL AVIATION, *CHINA, *FIRE RESISTANT MATERIALS, *AIRCRAFT SEATS

TEST AND EVALUATION, FIBERS, PITCH(MOTION), TURBULENCE, ATMOSPHERIC

MOTION, MICROSCOPY, INTERNAL, ITALY, LABORATORIES, LEADING EDGES, LOSSES, WINGS, ALTITUDE, AIRCRAFT FIRES, CHEMICAL ANALYSIS,

PASSENGERS,

OSCILLATION, MEDICAL EXAMINATION, FLAMMABILITY, FOAM, CUSHIONING, DELAWARE, AIRCRAFT CABINS

ID (25) FBL (FIRE BLOCKING LAYER), FIRE BLOCKING LAYER

AB (27) On April 6, 1993, China Airline's MD-11 Flight 583 underwent severe turbulence caused by the inadvertent deployment of the wing leading edge slats. The aircraft experienced three violent pitch oscillations and a loss of altitude of about 5,000 feet which significantly damaged the interior of the cabin. Upon examination of the passenger seats in the cabin interior, excessive wear was noticed with the fire-blocking layer (FBL) material which encapsulates the foam cushions that protect them in the event of a fire. Concerns arose with this FBL material manufactured by Testori of Italy, as well as other FBL material in service, with regard to their effectiveness in protecting the foam cushions from fire. Samples of this type of material underwent several flammability tests at the FAA technical Center International Airport, NJ, and chemical analysis and microscopic examination at the Pont Fibers Laboratory in Wilmington, Delaware.

AN (1) AD-A291 647/XAG

FG (2) 050500

050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Age and Low Doses of Alcohol on Compensatory Tracking During Angular Acceleration.

DN (9) Final rept.

AU (10) Harris, Howard C., Jr.

Schroeder, David J.

Collins, William E.

RD (11) Jan 1995

PG (12) 23 Pages

RS (14) DOT/FAA/AM-95/3

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *DOSE RATE, *AVIATION PERSONNEL, *ALCOHOLS,

*ALCOHOLISM

TEST AND EVALUATION, ANGLES, STIMULATION(GENERAL), TRAINING, SECONDARY,

GRAPHS, AGING(PHYSIOLOGY), TRACKING, ILLUMINATION, VARIATIONS,

VERTICAL

ORIENTATION, ERRORS, LOW LEVEL, DAY, RECOGNITION, MEAN,

COMPENSATION,

LOW RATE, SCORING, HEARING, ANGULAR ACCELERATION, BLOOD VOLUME,

ALCOHOL

CONSUMPTION, NEEDLES

AB (27) Heightened interest in existing FAA regulations regarding alcohol and

flying, with emphasis on the potential effects of low blood alcohol

levels on performance, indicated a need for research to help define

effects of low doses of alcohol on performance. This study was designed

to assess the effects of age and three breath alcohol levels (0.04,

0.027, and 0.014%). Performance was assessed while subjects experienced

mild angular stimulation. On the day prior to drinking, 48 subjects

drawn from three age categories (27-32, 42-47, and 57-62 years)

completed four training sessions on a compensatory tracking task (a

localizer/glide slope instrument that required compensatory tracking of

both a horizontal and a vertical needle) with and without a secondary

auditory recognition task, under 1.0 ft L. and 0.1 ft L. illumination

conditions. The test day consisted of a pre-drinking session and three experimental sessions conducted at the appropriate times on the descending limb of the alcohol curve, as indicated by breath alcohol measurements. Mean performance scores for the three age groups were compared across the four sessions, (pre-drinking and three levels of alcohol). A Multivariate Analysis of Variance (MANOVA) test yielded a significant interaction and a significant main effect (age and sessions) for the combined needle errors under the 0.1 ft L. illumination level with the secondary task. The resulting simple effects tests revealed age differences at all post-drinking sessions favoring younger over older subjects, and poorer performance for the older age subjects at the 0.04% BrAC level. When testing individual needle errors, MANOVA tests yielded a significant interaction and main effects in the high illumination condition both with and without the secondary task for vertical needle errors.

AN (1) AD-A292 064/XAG

FG (2) 060500

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Age and Low Doses of Alcohol on Compensatory Tracking During Angular Acceleration.

DN (9) Final rept.

AU (10) Harris, Howard C., Jr.

Schroeder, David J.

Collins, William E.

RD (11) Jan 1995

PG (12) 23 Pages

RS (14) DOT/FAA/AM-93/3

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AGING(PHYSIOLOGY), *ANGULAR ACCELERATION, *ALCOHOLISM, *ALCOHOL

CONSUMPTION

TEST AND EVALUATION, ANGLES, STIMULATION(GENERAL), TRAINING, PERFORMANCE(HUMAN), SECONDARY, GRAPHS, TRACKING, ILLUMINATION, VARIATIONS, VERTICAL ORIENTATION, ERRORS, LOW LEVEL, DAY, RECOGNITION,

MEAN, COMPENSATION, DOSE RATE, LOW RATE, SCORING, HEARING, ALCOHOLS,

BLOOD VOLUME, NEEDLES

AB (27) Heightened interest in existing FAA regulations regarding alcohol and flying, with emphasis on the potential effects of low blood alcohol levels on performance, indicated a need for research to help define effects of low doses of alcohol on performance. This study was designed to assess the effects of age and three breath alcohol levels (0.04, 0.027, and 0.014%). Performance was assessed while subjects experienced mild angular stimulation. On the day prior to drinking, 48 subjects drawn from three age categories (27-32, 42-47, and 57-62 years) completed four training sessions on a compensatory tracking task (a localizer/glide slope instrument that required compensatory tracking of both a horizontal and a vertical needle) with and without a secondary auditory recognition task, under 1.0 ft L. and 0.1 ft L. illumination conditions. The test day consisted of a pre-drinking session and three experimental sessions conducted at the appropriate times on the descending limb of the alcohol curve, as indicated by breath alcohol measurements. Mean performance scores for the three age groups were compared across the four sessions, (pre-drinking and three levels of alcohol). A Mutivariate Analysis of Variance (MANOVA) test yielded a significant interaction and a significant main effect (age and sessions) for the combined needle errors under the 0.1 ft L. illumination level with the secondary task. The resulting simple effects tests revealed age differences at all post-drinking sessions favoring younger over older subjects, and poorer performance for the older age subjects at the 0.04% BrAC level. When testing individual needle errors, MANOVA tests yielded a significant interaction and main effects in the high illumination condition both with and without the secondary task for vertical needle errors.

AN (1) AD-A292 973/XAG

FG (2) 010500

130200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation off Alternative Pavement Marking Materials.

DN (9) Final rept.

AU (10) Bagot, Keith W.

RD (11) Jan 1995

PG (12) 50 Pages

RS (14) DOT/FAA/CT-94/119

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PAVEMENTS, *MARKERS

TEST AND EVALUATION, ULTRAVIOLET RADIATION, COST EFFECTIVENESS,

EXPOSURE(GENERAL), COST ANALYSIS, SILICON DIOXIDE, MATERIALS, POLYMERS, ADHESION, RUBBER, CONCRETE, GLASS, COSTS, SURFACES, CEMENTS, SNOW,

RETENTION(GENERAL), COLORS, VISIBILITY, CLIMATE, PAINTS, EPOXY COMPOUNDS, BENEFITS, AIRPORTS, FRICTION, BEADS, WATERBORNE

AB (27) This study was undertaken to evaluate potential alternative marking materials for use on airport pavement marking systems. The materials were evaluated for conspicuity, durability, rubber buildup, color retention, friction, environmental acceptability, and cost benefits. In all, five materials (two water-borne, two epoxies, and one methacrylic resin) were evaluated at three test airports around the country for a period of one year. The three test airports, chosen for their different climatic conditions, were Atlantic City, Greater Pittsburgh, and Phoenix Sky Harbor International airports. Epoxies and resins were more durable than water-borne paints in areas subject to heavy snowfall and snowplow activity, particularly when applied to Portland cement concrete surfaces. The epoxies tested, however, did show signs of yellowing after extensive ultraviolet exposure. It was also determined that the addition of silica and/or glass beads improved the conspicuity of the markings, improved friction, and minimized rubber adherence. The cost-benefit analysis showed that more durable materials and the addition of silica and/or beads does increase the initial cost of marking the airport surfaces but could reduce the number of painting cycles on many portions of the airport from several times per year to once every several years.

AN (1) AD-A311 151/XAG

FG (2) 010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Criminal Acts Against Civil Aviation.

RD (11) 1995

PG (12) 91 Pages

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *CIVIL AVIATION, *CRIMES

GLOBAL, ATTACK, THREAT EVALUATION, CASUALTIES, INTERNATIONAL AIRPORTS,

GEOGRAPHIC AREAS, TERRORISM, BOMBING, GENERAL AVIATION AIRCRAFT,

AIRCRAFT HIJACKING

AB (27) The report details criminal acts against civil aviation in a compilation of hijackings, bombings, and other significant criminal acts against civil and general aviation interests world wide.
23

AN (1) AD-A319 723/XAG

FG (2) 010600

050900

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) U.S. Civil Airmen Statistics, Calendar Year 1995.

DN (9) Annual rept.

RD (11) 1995

PG (12) 143 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *STATISTICS, *CIVIL AVIATION, *AVIATION PERSONNEL STUDENTS, FLIGHT CREWS, PILOTS, COMMERCIAL AVIATION, HELICOPTERS, FLIGHT INSTRUMENTS, TABLES(DATA), INSTRUCTORS, TRANSPORT AIRCRAFT, GLIDERS

AB (27) This report contains calendar year statistics on pilots and nonpilots and the number of certificates issues. It also contains counts of pilots and nonpilots by state and county.

AN (1) AD-A288 638/XAG

FG (2) 010600

230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Human Factors at the FAA Technical Center: Bibliography 1958-1994.

DN (9) Technical note Dec 93-Dec 94

AU (10) Stein, Earl S.

Buckley, Edward

Mann, Kathy

RD (11) Dec 1994

PG (12) 47 Pages

RS (14) DOT/FAA/CT-TN94/50

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Prepared in collaboration with Princeton Economic Research Inc., NJ.

DE (23) *HUMAN FACTORS ENGINEERING, *AVIATION SAFETY DATA BASES, PERFORMANCE(HUMAN), PILOTS, BIBLIOGRAPHIES, AIR TRAFFIC CONTROL SYSTEMS, AIR SPACE, CIVIL AVIATION, FLIGHT SIMULATORS, MAN MACHINE SYSTEMS, MAN COMPUTER INTERFACE, AIR TRAFFIC

CONTROLLERS,

COLLISION AVOIDANCE, COMPUTER PERSONNEL, MARKER LIGHTS, VISUAL

FLIGHT

RULES, NOISE POLLUTION

AB (27) Since the Federal Aviation Administration (FAA) arrived in Atlantic city in 1958, there have been ongoing efforts in aviation human

factors. These efforts have taken many forms and have focused on both

the ground and air sides of the airspace system. Psychologists,

engineers, systems analysts, computer scientists, and others have

participated in the studies that have led to the numerous reports and

papers cited in this bibliography. While this listing is probably not

all inclusive, it covers virtually all work that is referenced in

automated data bases plus publications that were identified by current

and past researchers, but which never made it to the computerized

listings. This bibliography is meant to highlight the work that has

gone on over the years. While many of the documents cited are still

available from the Technical Center library, or from the authors

themselves, the editors do not suggest that everything is retrievable,

and, in fact, much of the older work has been superseded by more modern

technology and thinking. The research of 30 years ago has served as

a foundation for the human factors engineering that is being done

today. The references are provided in alphabetical order and indexed

by numbers associated with subject matter categories. Human factors

research is alive and continues to progress in the FAA and at the

Technical Center.

AN (1) AD-A289 261/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Airport Surveillance Radar (ASR) Solid-State Transmitter Demonstration.

DN (9) Final rept.

AU (10) Healy, Thomas A.

Ferranti, Richard L.

RD (11) Dec 1994

PG (12) 159 Pages

RS (14) DOT/FAA/CT-TN94/11

RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIRPORT RADAR SYSTEMS, *SEARCH RADAR, *RADAR TRANSMITTERS,
*SOLID
STATE ELECTRONICS
TEST AND EVALUATION, LOW POWER, OUTPUT, DEMONSTRATIONS, AIRCRAFT
DETECTION, WAVEFORMS, PEAK POWER, MAINTAINABILITY,
CONFIGURATIONS,
RADAR PULSES, PULSE COMPRESSION, DYNAMIC RANGE, NOISE(RADAR),
TARGET
ECHOES

AB (27) Present versions of the Federal Aviation Administration (FAA) Airport Surveillance Radar (ASR) use either magnetron or klystron radar transmitter configurations. These radars transmit a simple pulse waveform and use the peak power capabilities in the detection process. Solid-state technology does not allow for transmission of high-peak power pulses in the S-band. As a consequence, the solid-state transmitter uses the average power capabilities of the transmitted pulses. A longer, lower peak power pulse is transmitted. The pulse is coded to increase the bandwidth of the transmitted waveform. Upon reception of the echo, the long pulse is compressed to provide the range resolution of a shorter pulse. This report presents results of tests of a solid-state transmitter system developed by ITT and Thomson-CSF under a Cooperative Research and Development Agreement (CRDA) with the FAA. The demonstration system was tested at the ASR-9 test facility at the FAA Technical Center, Atlantic City International Airport, NJ. The tests performed were divided into three major categories; transmitter tests, receiver tests, and system tests. The transmitter tests included measurements of the waveforms and operating frequencies; the output power; the output spectrum; and a maintainability demonstration. The receiver tests included measurements of the noise figure, dynamic range, bandwidth, and waveform characteristics at the output of the pulse compressor. The system tests included measurements of the pulse compression time sidelobe performance, stability, detection performance, and range resolution.

AN (1) AD-A290 952/XAG
FG (2) 010500
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Federal Aviation Administration Plan for Research Engineering and Development. 1995.
RD (11) Dec 1994

PG (12) 203 Pages
RN (18) XH-XD
RC (20) Unclassified report
NO (21) Report to the United States Congress.
DE (23) *ENVIRONMENTS, *AIR TRAFFIC CONTROL SYSTEMS, *AVIATION SAFETY,
*AIR
TRAFFIC
EMISSION, INDUSTRIES, GROWTH(GENERAL), NITROGEN, AERONAUTICS,
COSTS,
FUELS, ENGINEERING, AIR SPACE, HIGH ALTITUDE, DELAY, ENGINES, CIVIL
AVIATION, CONTINUITY, PASSENGER AIRCRAFT, AIRPORTS, ENERGY
CONSERVATION, EMISSION CONTROL, PASSENGERS
ID (25) FAA(FEDERAL AVIATION ADMINISTRATION)
AB (27) The Federal Aviation Administration (FAA) manages and operates the National Airspace System (NAS), a significant national resource. However, the demands on this system are continuously growing, and changing technologies provide the opportunity to improve system effectiveness and efficiency. Today, 23 of the country's largest airports are plagued by more than 20,000 hours of delay per year, which is projected to grow to 40 major airports by 2000. Nationally, air traffic delays cost the economy an estimated \$6 billion in passenger delays and \$3 billion in airline operating costs in 1990. At current trends, these costs will increase 50 percent within 10 years. Aviation and related industries are also challenged by energy and environmental factors. Currently, 45 percent of air carrier aircraft operating costs are for fuel, a large portion of which is from imported oil. While reducing fuel usage is a priority in terms of energy conservation, it is also an increasingly critical environmental issue, based on recent findings relating to nitrogen oxide emissions at high altitudes. Given the projected increases in aviation activity and stringent environmental standards being proposed in Europe and elsewhere, noise and engine emissions reductions are essential to the national aviation industry's viability. pg7. JMD

AN (1) AD-A291 065/XAG
FG (2) 010500
130200
170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Evaluation of Retro-Reflective Beads In Airport Pavement Markings.
DN (9) Final rept.
AU (10) Bagot, Keith W.

RD (11) Dec 1994
PG (12) 66 Pages
RS (14) DOT/FAA/CT-94/120
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *PAVEMENTS, *LANDING FIELDS, *INTERNATIONAL AIRPORTS, *VISUAL AIDS TEST AND EVALUATION, OPTIMIZATION, COST ANALYSIS, SILICON DIOXIDE, AIRBORNE, ASPHALT, CONCRETE, GLASS, SURFACES, CONSTRUCTION, PAINTS, MARKERS, REFLECTIVITY, FRICTION, RUNWAYS, CHEMICAL ANALYSIS, WEATHERPROOFING, NAVIGATIONAL AIDS, BEADS, WATERBORNE
ID (25) *GLASS BEADS, CONSPICUITY CODES, DURABILITY, SILICA
AB (27) This report identifies the results of a 1-year comparative evaluation on the use of retro-reflective glass beads in airport surface pavement markings. Class beads meeting Federal Specification TT-B-1325B, Type I and III were tested at three airports for retro-reflectivity, effects on runway friction, conspicuity, and durability. The three test airports were Atlantic City, Greater Pittsburgh, and Phoenix Sky Harbor International airports. Data from this study show the use of beaded materials in airport markings increased the conspicuity and quality of the airport markings. Also discovered in this evaluation was the friction enhancement gained from the incorporation of beads and silica additives into the paint materials. As a result of the findings of this study, certain modifications are recommended for the two existing specifications regarding airport pavement markings, AC 150/5370-IOA, Standards for Specifying Construction on Airports and AC 150/5340-1G Standards for Airport Markings. -BKA

AN (1) AD-A291 161/XAG
FG (2) 070300
070400
131200
201300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Comparative Extinguishment Performance and Thermal Decomposition Products of Halon Alternative Agents.

DN (9) Final rept.
AU (10) Filipczak, Robert A.
RD (11) Dec 1994
PG (12) 75 Pages
RS (14) DOT/FAA/CT-94/59
RN (18) XH-XD

RC (20) Unclassified report
DE (23) *THERMAL PROPERTIES, *FIRE FIGHTING, *HALOGENATED HYDROCARBONS, *DECOMPOSITION, *EXTINGUISHING MEASUREMENT, MAGNETIC FIELDS, PRODUCTION, WATER, POLYMERS, GASES, FUELS, CHEMICAL REACTIONS, MASS SPECTROMETERS, SYNCHRONISM, METHANE, CARBON DIOXIDE, CHEMICAL ANALYSIS, PYROLYSIS, FLUORINATED HYDROCARBONS, ACIDS, OXYGEN CONSUMPTION, HYDROGEN FLUORIDE
ID (25) ALTERNATIVE AGENTS, EXTINGUISHMENT
AB (27) Halon 1301, Halon 1211, and eleven alternative fire-fighting agents were compared for extinguishment effectiveness and thermal decomposition product generation, using a laboratory-scale test apparatus having methane as the fuel. Chemical analysis was conducted using a magnetic sector mass spectrometer with simultaneous measurement of oxygen consumption and carbon dioxide, water, and acid gas production. Chemical mechanisms are advanced to explain how halogenated hydrocarbons extinguish fires. The major conclusion was that the alternative agents were not as effective at fighting fires as Halons and that greater amounts of acid gases were produced during extinguishment. Hydrogen fluoride was found to be the predominant thermal decomposition product for all agents. jg

AN (1) AD-A291 248/XAG
FG (2) 130800
040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC QUIET SHORT-HAUL AIR

TRANSPORTATION SYSTEMS OFFICE

TI (6) A Guide for Quality Control of Surface Meteorological Data.

RD (11) Dec 1994
PG (12) 81 Pages
RS (14) DOCUMENT -382-94
RN (18) XD-XD
RC (20) Unclassified report
DE (23) *METEOROLOGICAL DATA SURFACES, QUALITY CONTROL, BAROMETERS, THERMOMETERS, HYGROMETERS

AB (27) This guide is intended to assist ranges in the development and maintenance of an acceptable quality control program for surface meteorological data.

AN (1) AD-A319 620/XAG
FG (2) 010600
050200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
POLICY AND PLANS
TI (6) Census U.S. Civil Aircraft, Calendar Year 1994.
DN (9) Annual rept.
RD (11) 31 Dec 1994
PG (12) 438 Pages
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *UNITED STATES, *CIVIL AVIATION, *CENSUS, *GENERAL AVIATION AIRCRAFT
MANUFACTURING, TABLES(DATA), INVENTORY, PASSENGER AIRCRAFT, AIRCRAFT
MODELS, CARRIER BASED AIRCRAFT
AB (27) This report presents information about the U.S. Civil Aircraft Fleet. It includes detailed tables of air carrier aircraft and an inventory of inventory of registered aircraft by manufacturer model, and general aviation aircraft by state and county of the owner.

AN (1) AD-A286 584/XAG
FG (2) 050800
120500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Summary Proceedings of the Joint Industry-FAA Conference on the Development and Use of PC-Based Aviation Training Devices, Held in Oklahoma City, Oklahoma on 16-17 Jun 1994
AU (10) Williams, Kevin W.
RD (11) Nov 1994
PG (12) 23 Pages
RS (14) DOT/FAA/AM-94/25
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *TRAINING DEVICES, *MEMORY(PSYCHOLOGY)
PSYCHOLOGY
ID (25) *Computer based instructions, Allied psychology
AB (27) This report is a summarization of the proceedings of a joint industry -

FAA conference on the development and use of PC-based aviation training devices (PCATDs) that was held June 16-17, 1994 in Oklahoma City, Oklahoma. Attendees to the conference included representatives from the PC development community, various universities conducting aviation training research, and the FAA. The primary purpose of the conference was to provide a forum of open dialog among interested PCATD parties, with the aim of finding common ground or areas of consensus, through which progress can be made in reducing or resolving any differences in viewpoint. Aside from the welcoming addresses by FAA representatives, the conference consisted of volunteered presentations by attendees, followed by open discussion of the points made by the presenter. A variety of topics were discussed and an attempt was made to let points and contentions be explored to the extent the group wished to pursue them. No attempt was made to provide a verbatim reproduction of the content of presentations and discussions. However, a concerted effort was made to capture the essence of each presenter's position, to accurately paraphrase major points, and to include brief summaries of group discussions through the insertion of editor's notes.

AN (1) AD-A288 696/XAG
FG (2) 010500
010600
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) A NASPAC-Based Analysis of the Delay and Cost Effects of the Western-Pacific Region Preliminary Resectorization Effort of 1993.
DN (9) Technical note
AU (10) Richie, Joseph M.
Baart, Douglas
RD (11) Nov 1994
PG (12) 145 Pages
RS (14) DOT/FAA/CT-TN94/49, FAA-AOR-100-94-012
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIRPORTS, *RUNWAYS, *AIR TRAFFIC
AIRCRAFT, WEATHER, PREDICTIONS, CAPACITY(QUANTITY), MODULAR CONSTRUCTION, AIRPORT RADAR SYSTEMS, COSTS, DELAY, CALIFORNIA, PASSENGERS
ID (25) RESECTORIZATION, NASPAC(NATIONAL AIRSPACE SYSTEM PERFORMANCE ANALYSIS),
TRAFFIC FLOW
AB (27) This report contains the findings and analysis of the effects of the Western-Pacific Region (AWP) Preliminary Resectorization Plan of 1993

on local (AWP airports) and system-wide traffic delays. The National Airspace System Performance Analysis Capability (NASPAC) was used to perform this task, and calculates the local and system-wide delays with and without the AWP Resectorization Plan. Cost of delay was derived using the Cost of Delay Module based on these delays, on passenger cost, and on airline and aircraft specific cost. The results indicate that the proposed resectorization will reduce the operational delay in years 1995 and 2000 at most AWP airports and system-wide with the maximum benefit occurring in the year 2000. On the other hand, resectorization does not favor the passengers for the future years modeled. However, in year 2000, the increase in passenger delay is less than for year 1995.

AN (1) AD-A289 015/XAG

FG (2) 010500

120400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Precision Landing System Mathematical Modeling Study Report for Andrews Air Force Base, Runway 19L, Camp Springs, MD.

DN (9) Technical note, Jun-Jul 93

AU (10) Jones, Jesse

Rushton, Elliott

Lockhart, Ronald

RD (11) Nov 1994

PG (12) 129 Pages

RN (18) DOT/FAA/CT-TN93/35

XH-XD

RC (20) Unclassified report

DE (23) *MATHEMATICAL MODELS, *RUNWAYS, *MICROWAVE LANDING SYSTEMS, *DISTANCE

MEASURING EQUIPMENT

ANGLES, SOURCES, SCATTERING, MARYLAND, AIRCRAFT, TERRAIN, MODEL TESTS,

ERRORS, PRECISION, TOLERANCE, SEPARATION, AIR FORCE FACILITIES, RANGE(DISTANCE), PLOTTING, MULTIPATH TRANSMISSION, HANGARS

ID (25) DME/P(PRECISION DISTANCE MEASURING EQUIPMENT)

AB (27) This technical note describes Microwave Landing System (MLS) and Precision Distance Equipment (DME/P) mathematical modeling performed for runway 19L, Andrews Air Force Base (ADW), Camp Springs, Maryland. This study evaluates the effects of scattering and shadowing from selected buildings, hangars, aircraft, and terrain. Results are provided as plots illustrating the predicted multipath levels,

separation angles, and the resulting error plots from the worst case contributors. Scenarios were modeled to determine the effects of the multipath sources in the modeled environment. These resulting errors were analyzed and compared to error tolerance (FAA-STD-022d) to determine if the errors are acceptable. The effects of the ADW environment were analyzed and evaluated. It was determined that the proposed site will perform satisfactorily with no changes.

AN (1) AD-A290 136/XAG

FG (2) 010500

170700

010600

130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Prototype Stop Bar System Evaluation At Seattle-Tacoma International Airport.

DN (9) Final rept.

AU (10) Katz, Eric

RD (11) Nov 1994

PG (12) 81 Pages

RS (14) DOT/FAA/CT-94/62

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIRPORTS, *APPROACH LIGHTS SPECIFICATIONS, ACCEPTANCE TESTS, PILOTS, PROTOTYPES, RELIABILITY, VISIBILITY, USER NEEDS, CIVIL AVIATION, MAINTENANCE MANAGEMENT, SYSTEMS

ANALYSIS, AVIATION SAFETY, RUNWAYS, AIR TRAFFIC CONTROLLERS, ALL WEATHER AVIATION, NAVIGATIONAL AIDS, INDICATOR LIGHTS

AB (27) An interim United States stop bar specification was developed by the Federal Aviation Administration Technical Center. Using the guidance material contained in the interim specification, a full-scale prototype stop bar system was installed to protect runway 16R/34L at the Seattle-Tacoma International Airport (SEA). The system consists of two stop bars which incorporate both inset and elevated red light fixtures. Associated with each stop bar are green inset lead-on lights and microwave detectors that provide for automatic switching of the stop bar/lead-on light segments. Once installed, the SEA stop bar system was operated during air traffic controller training sessions and under actual low-visibility weather conditions for evaluation and user organization familiarization. Air traffic controller and air-carrier pilot questionnaires were distributed and returned to the

FAA Technical Center for analysis after completion. The questionnaires were designed to solicit information regarding the effectiveness and reliability of the stop bar system. As a result of the evaluation, the U.S. stop bar lighting configuration, as developed and described in the interim specification, was found to be satisfactory and acceptable to user pilots. (AN)

AN (1) AD-A290 542/XAG

**FG (2) 010300
110400**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aircraft Advanced Materials Research and Development Program Plan.

DN (9) Final rept.

AU (10) Shyprykevich, Peter
Soderquist, Joe

RD (11) Nov 1994

PG (12) 56 Pages

RS (14) DOT/FAA/CT-94/106

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *COMPOSITE MATERIALS, *COMPOSITE STRUCTURES
METHODOLOGY, NONDESTRUCTIVE TESTING, MATERIALS, POLYMERS,
CERAMIC

MATRIX COMPOSITES, METAL MATRIX COMPOSITES, CERAMIC MATERIALS,

REPAIR,

CARBON CARBON COMPOSITES, BONDED JOINTS, INSPECTION, REINFORCING
MATERIALS, FIBER REINFORCEMENT

AB (27) This report describes the FAA research and development plan in Aircraft Advanced Materials and Structures. The Aircraft Advanced Materials Research and Development Plan identifies technology issues that must be addressed to accomplish the FAA mission.

AN (1) AD-A285 832/XAG

**FG (2) 131200
140300**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Investigation of Flight Data Recorder Fire Test Requirements.

DN (9) Technical note

AU (10) Curran, Lawrence J., Jr.

RD (11) Oct 1994

PG (12) 27 Pages

RS (14) DOT/FAA/CT-TN94/23

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *FIRE RESISTANCE, *FLIGHT RECORDERS

AIRCRAFT, BURNERS, COCKPITS, COMPARISON, ENVIRONMENTS, FUELS,
HEATING,

INTERNAL, JET ENGINE FUELS, MAGNETIC TAPE, MODELS, OVENS, PROPANE,
RECORDING SYSTEMS, REQUIREMENTS, RESISTANCE, SITES, STANDARDS,

TAPES,

TEMPERATURE, TEST AND EVALUATION, THERMAL RESISTANCE, TIME, VOICE
COMMUNICATIONS

AB (27) This report evaluates fire test methodologies for aircraft flight data and cockpit voice recorders. The current fire test requirement consists of a 30-minute exposure to a propane burner calibrated to the heating conditions created by a jet fuel fire. A comparison was made of the internal temperature of flight recorder models subjected to the propane burner standard and a jet fuel fire. The internal temperature was approximately 40 percent higher during the fuel fire tests which were 6-8 minutes in duration. Although the fuel fire duration was limited, it appears that a 60-minute propane burner test exposure is a feasible and conservative means of evaluating the thermal resistance of a flight recorder subjected to a 30-minute fuel fire. An additional fire test condition (500 deg F/10 hours) has been proposed to simulate a smoldering fire which may persist for a long period of time at a remote site. A state-of-the-art magnetic tape of the cockpit voice recorder was subjected to this condition in an oven and failed the test, demonstrating the severity of this exposure environment. Fire resistance, Fire tests, Flight data recorder, Cockpit voice recorder.

AN (1) AD-A286 590/XAG

**FG (2) 250200
040200**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test and Evaluation Master Plan (TEMP) for the Weather Message Switching Center Replacement (WMSCR).

DN (9) Technical note

AU (10) Benner, William
Gordner, Nannette

Roth, David

RD (11) Oct 1994

PG (12) 46 Pages

RS (14) DOT/FAA/CT-TN94/38
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *COMMUNICATION SWITCHING CENTERS, *MESSAGE PROCESSING,
*WEATHER
COMMUNICATIONS
WEATHER FORECASTING, TEST AND EVALUATION, ACCEPTANCE TESTS
ID (25) TEMP(Test and Evaluation Master Plan), WMSCR(Weather Message Switching
Center Replacement), NAS(National Airspace System), NADIN(National
Airspace Data Interchange Network)
AB (27) The Weather Message Switching Center Replacement (WMSCR) Test and
Evaluation Master Plan (TEMP) outlines the Test and Evaluation (T and
E) process that will be used to ensure that the WMSCR meets the
requirements of both the project specification and the requirements
allocated from the National Airspace System (NAS) documents. It
provides strategy and guidance for test requirements. The WMSCR TEMP
has been prepared in accordance with FAA Order 1810.4B and
FAA-STD-024a. The WMSCR TEMP follows the requirements defined in
FAA-E-2764c, WMSCR Requirements Specification. This TEMP is a
high-level document that related required system characteristics and
critical issues to test objectives. It addresses Developmental Test and
Evaluation (DT and E), Production Acceptance T and E (PAT and E),
Operational T and E (OT and E) for System Shakedown (OT and E
Shakedown). The TEMP also outlines procedures to be followed to ensure
the successful integration of the WMSCR system into the NAS. Testing is
performed to ensure integration of new subsystems will not degrade the
current operations of the NAS.

AN (1) AD-A288 280/XAG

FG (2) 040200

170900

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Weather and Radar Processor (WARP) Test and Evaluation Master Plan
(TEMP).

DN (9) Technical note

AU (10) Benner, William

Malitsky, Christopher

Hall, William

Printy, Matthew

RD (11) Oct 1994

PG (12) 129 Pages

RS (14) DOT/FAA/CT-TN94/36

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DATA PROCESSING, *AIR TRAFFIC CONTROL SYSTEMS,

*METEOROLOGICAL RADAR,

*METEOROLOGICAL DATA

OPERATIONAL EFFECTIVENESS, WEATHER, METEOROLOGICAL SATELLITES,

WEATHER

FORECASTING, HUMAN FACTORS ENGINEERING

AB (27) This Test and Evaluation Master Plan (TEMP) describes the Test and
Evaluation (T&E) processes which will be used to ensure the Weather and
Radar Processor (WARP) system meets the requirements allocated to the
project in the NAS-SS-1000, volumes I, II, and V, the NAS-SR-1000, and
the WARP System Specification, FAA-E-To Be Determined (TBD). This TEMP
defines test strategy, test requirements, and organizational roles and
responsibilities and is developed in accordance with Federal Aviation
Administration (FAA) Order 1810.4B and FAA-STD-024a. This version of
the TEMP addresses the testing requirements for the first two stages of
WARP. This TEMP will be updated with additional detail when the WARP
program Stage 1, 2, and 3 NAS Change Proposals (NCP) are developed and
as the program progresses through the KDP 3 and KDP 4 phases. The
original TEMP and its revisions will be submitted for approval by the
Test Policy Rules Committee (TPRC). A WARP system will be deployed in
all Air Route Traffic Control Centers (ARTCC) and at the Air Traffic
Control System Command Center (ATCSCC). It is a Non-developmental Item
(NDI)-based automated interactive meteorological data and information
processing service that will serve as the primary source of real-time
tactical and strategic weather data for air traffic controllers,
traffic management unit (TMU) coordinators and area supervisors,
meteorologists, and pilots. The WARP system will provide real-time
mosaicked WSR-88D products to the air traffic controllers.

AN (1) AD-A288 649/XAG

FG (2) 050800

050900

010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) A Protocol for Selecting Airline Passenger Baggage Screeners.

DN (9) Interim rept.

AU (10) Lofaro, Ronald J.

Gibb, Gerald D.

Garland, Daniel J.

Guide, Patrick C.

Baker, James S.

RD (11) Oct 1994

PG (12) 32 Pages

RS (14) DOT/FAA/CT-94/24

CT (15) FAA-93-G-037

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERSONNEL SELECTION, *JOB ANALYSIS, *PERCEPTION(PSYCHOLOGY)

SCANNING, DECISION MAKING, SKILLS, PREDICTIONS,

PERFORMANCE(HUMAN),

COGNITION, VIGILANCE, OPTICAL IMAGES, X RAYS, PATTERN RECOGNITION,

CIVIL AVIATION, VISUAL PERCEPTION, TARGET DETECTION,

JUDGEMENT(PSYCHOLOGY), PERSONNEL RETENTION, PERSONALITY,

SECURITY

PERSONNEL, APTITUDE TESTS, AVIATION PERSONNEL

AB (27) This report is the second in a three-part series that describes a research program to improve the selection and retention of airline passenger pre-board screener personnel. This document details the methodology used to conduct a job task analysis of the X-ray position. The job task analysis was conducted to provide guidance in the selection and development of potential predictor instruments. The task analysis appears to indicate a number of cognitive and perceptual abilities that may be related to successful target detection.

The job task analysis was conducted to provide guidance in the selection and development of potential predictor instruments. The task analysis appears to indicate a number of cognitive and perceptual abilities that may be related to successful target detection. Specifically, perceptual abilities encompassing the constructs of flexibility of closure, speed of closure, perceptual speed, field dependence-independence, and pattern recognition may contribute to the acquisition of relevant information while scanning X-ray images.

Higher level cognitive processes involved in decision making and attentional resources encompassed by the construct of vigilance appear to be required for successful screener performance as well. These psychological qualities are important for the role they play in analyzing and attending to the relevant input. Together with the assessment of appropriate personality traits, the incorporation of perceptual and cognitive assessment instruments has the potential to establish a useful personnel selection system.

AN (1) AD-A288 652/XAG

FG (2) 010600

010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Updated National Airspace System Performance Assessment for Year 2005

(1994).

DN (9) Technical note

AU (10) Baart, Douglas

Cheung, Anny

RD (11) Oct 1994

PG (12) 31 Pages

RS (14) DOT/FAA/CT-TN94/41, FAA-AOR-100-94-009

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *AIR TRAFFIC

MATHEMATICAL MODELS, COMPUTERIZED SIMULATION, COST

EFFECTIVENESS,

PREDICTIONS, CAPACITY(QUANTITY), STATISTICAL DATA, AIR TRAFFIC

CONTROL

SYSTEMS, OPERATIONAL EFFECTIVENESS, ESTIMATES, LIMITATIONS, AIR

SPACE,

ADVERSE CONDITIONS, DELAY, LANDING FIELDS, CONGESTION, AVIATION

SAFETY,

AIRPORTS, ALL WEATHER AVIATION

AB (27) This report documents the evaluation of the National Airspace System (NAS) performance for year 2005. The National Airspace System Performance Analysis Capability (NASPAC) Simulation Modeling System (SMS) was used to simulate the future air traffic control (ATC) system. Airport airfield and technological improvements expected to be

completed by year 2005 were included in this analysis. Future air traffic demand was based on the 1993 Terminal Area Forecasts (TAF). The study results indicate that most of the delay in the system for year 2005 is caused by airfield capacity limitations. Three-fourths of the delay is related to ground operations or ground manifestation of airspace congestion. About 45 percent of the total delay is related to ground operations or ground manifestation of airspace congestion. About 45 percent of the total delay is attributed to adverse weather.

Airports that have no future airfield improvements planned show the highest delay estimates.

AN (1) AD-A288 670/XAG

FG (2) 010600

050900

050800

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Job Tenure Factors for Airline Passenger Baggage Screeners.

DN (9) Interim rept.

AU (10) Lofaro, Ronald J.
Gibb, Gerald D.
Garland, Daniel J.
Guide, Patrick C.
Baker, James S.
St Laurent, Mark
RD (11) Oct 1994
PG (12) 92 Pages
RS (14) DOT/FAA/CT-94/109
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *PERSONNEL SELECTION, *SECURITY PERSONNEL, *CIVIL AVIAITON
COMPETITION, PERFORMANCE(HUMAN), STATISTICAL DATA, SALARIES,
MOTIVATION, INTERVENTION, PERSONNEL RETENTION, JOB SATISFACTION,
PERSONALITY, GRADE STRUCTURE(PERSONNEL MANAGEMENT),
ORGANIZATION
THEORY, DELPHI TECHNIQUES, CAREEEERS
AB (27) This is the final report of a three-part series of a research program
to improve the selection and retention of airline passenger pre-board
screener personnel. This report describes the Delphi small-group
process methodology that was used to identify factors affecting the
tenure of screener personnel. Although the Delphi process has been
completed and yielded valuable findings, additional research efforts
are required before intervention programs are developed.
Recommendations for intervention programs, based on the data obtained,
have been provided. The reader is referred to the first report for an
examination of the literature related to the selection and performance
measurement issues. Methodology and results completed during a job
task analysis can be found in the second report of the series.

AN (1) AD-A284 765/XAG
FG (2) 010200
010600
040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Operational and Supportability Implementation System (OASIS) Test and
Evaluation Master Plan.
DN (9) Technical note
AU (10) Benner, William E.
McCullough, James A.
RD (11) Sep 1994
PG (12) 83 Pages

RS (14) DOT/FAA/CT-TN94/6
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *WEATHER, *AIR SPACE, *AIR TRAFFIC CONTROL SYSTEMS, *AVIATION
SAFETY
ACQUISITION, AIRCRAFT, AUTOMATION, FLIGHT, MODELS, OFF THE SHELF
EQUIPMENT, SAFETY, STATE OF THE ART, TEST AND EVALUATION, WORK
STATIONS, COMPUTER PROGRAMS, SPECIFICATIONS, DATA PROCESSING,
COMPUTERS, DISPLAY SYSTEMS
AB (27) This Test and Evaluation Master Plan (TEMP) is for the Operational And
Supportability Implementation System (OASIS) and describes the Test and
Evaluation (T&E) processes that ensure the system meets the
requirements allocated to the project in the NAS-SS-1000, volumes I and
II, and the NAS-SR-1000. The document defines test strategy, test
requirements, and organizational roles and responsibilities. The
purpose of the plan is to define the overall T&E phases necessary to
ensure the integration of the OASIS within the environment of the
National Airspace System (NAS). The OASIS will replace the Model 1 Full
Capacity (M1FC) work station position equipment, located at the 61
Automated Flight Service Stations (AFSS) and provide a planned
capability for new Flight Service Automation System (FSAS) AFSS
state-of-the-art work station equipment which can be logistically
supported. The hardware and software will mainly be comprised of
commercial-off-the-shelf (COTS) and/or nondevelopmental item (NDI)
acquisitions. The capability will include functionality to store,
retrieve, display, highlight, zoom, and transfer information applying
to any set of weather conditions, route of flight, or aircraft type.
Weather and flight route information will be displayed simultaneously.
The specialist will review visual notification of flight route problems
including severe weather, and other safety concerns. FSAS M1FC Work
Station, Operational and Supportability Implementation System (OASIS),
Automated Flight Service Station Work Station (AFSSWS).

AN (1) AD-A285 624/XAG
FG (2) 010305
230200
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST
TI (6) The Performance of Child Restraint Devices in Transport Airplane
Passenger Seats
AU (10) Gowdy, Van
DeWeese, Richard

RD (11) Sep 1994
PG (12) 34 Pages
RS (14) DOT/FAA/AM-94/19
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *IMPACT TESTS, *SEATS, *AIRCRAFT SEATS, *TRANSPORT AIRCRAFT AIRCRAFT, BACKGROUND, BELTS, DYNAMICS, FACINGS, OBSERVATION, PASSENGERS, POLICIES, PRESSURE, REGULATIONS, RESTRAINT, TEST AND EVALUATION, VELOCITY, CHILDREN, AIR TRANSPORTABLE EQUIPMENT
ID (25) CRDs(Child Restraint Devices)
AB (27) The performance of child restraint devices (CRDs) in commercial transport airplane passenger seats was evaluated by a dynamic impact test program. Background information on the policies and regulations related to child restraints is summarized. Tests were conducted at the FAA Civil Aeromedical Institute. Six types (CRDs) certified for use in airplanes were tested. Booster seats, forward facing carriers, aft facing carriers, a harness device, a belly belt, and passenger seat lap belts were evaluated. Impact tests were conducted with CRDs installed on airplane passenger seats. The test severity was 16 Gpk with an impact velocity of 44 ft/sec. Effects of multiple row seats, aft row occupant impact loads, and seat back breakover were part of the project protocol. Four child size anthropomorphic test dummies were utilized. The 6-month and 36-month size ATDs defined in 49 CFR Part 572, the 6-month size CRABI ATD, and a 24-month size experimental ATD identified as CAMIX were used in these tests. An experimental device to measure abdominal pressure was evaluated in the CRABI and CAMIX ATDS. Analyses of the data acquired from the tests and observations related to the performance of the CRDs in airplane seats are presented. Child restraints, Transport airplanes, Passenger seats.

AN (1) AD-A285 666/XAG

FG (2) 210200

070400

240100

061100

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Simultaneous Gas-Chromatographic Determination of Four Toxic Gases Generally Present in Combustion Atmospheres.

DN (9) Final rept.

AU (10) Endecott, Boyd R.
Sanders, Donald C.

Chaturvedi, Arvind K.
RD (11) Sep 1994
PG (12) 10 Pages
RS (14) DOT/FAA/AM-94/18
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *CARBON MONOXIDE, *COMBUSTION PRODUCTS, *HYDROGEN SULFIDE AIRCRAFT CABINS, FABRICS, HIGH SENSITIVITY, HYDROGEN CYANIDE, INHALATION, NITROGEN, OXYGEN, PARTICULATES, RESPIRATION, SMOKE, THERMAL CONDUCTIVITY, TOXICOLOGY, WATER VAPOR, COMBUSTION CHAMBER GASES, GAS CHROMATOGRAPHY, SULFUR OXIDES, CONCENTRATION(COMPOSITION), AIR POLLUTION, TOXIC HAZARDS, BURNING RATE, QUANTITATIVE ANALYSIS, AIR MASS ANALYSIS
AB (27) Measurement of combustion gases produced by burning aircraft cabin materials poses a continuing limitation for smoke toxicity research. Since toxic effects of gases depend on both their concentrations and duration of exposures, frequent atmosphere sampling is necessary to define the concentration-time curve. A gas chromatographic method was developed for the simultaneous analyses of carbon monoxide (CO), hydrogen sulfide (H₂S), sulfur dioxide (SO₂), and hydrogen cyanide (HCN). The method utilized an MTI M200 dual-column gas chromatograph (GC) equipped with 4-m molecular sieve-5A and 8-m PoraPlot-U capillary columns and two low-volume, high-sensitivity thermal conductivity detectors. Detectability (ppm)/retention times (seconds) for the gases were: CO (100/28); H₂S (50/26); SO₂ (125/76); HCN (60/108). The method was effective for determining these gases in mixtures and in the combustion atmospheres generated by burning wool (CO, HCN, and H₂S) and modacrylic (CO and HCN) fabrics. Common atmospheric gaseous or combustion products (oxygen, carbon dioxide, nitrogen, water vapor, and other volatiles) did not interfere with the analyses. However, filtration of the combustion atmospheres was necessary to prevent restriction of the GC sampling inlet by smoke particulates. The speed, sensitivity, and selectivity of this method make it suitable for smoke toxicity research and for evaluating performance of passenger protective breathing equipment. Inhalation toxicology, Combustion gases, Carbon monoxide, Hydrogen sulfide, Sulfur dioxide, Hydrogen cyanide, Wool, Modacrylic fabric

AN (1) AD-A285 831/XAG

FG (2) 140200

010300
131200
210200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Round-Robin Comparison of Heat Release Apparatus.

DN (9) Technical note

AU (10) Johnson, Richard M.

RD (11) Sep 1994

PG (12) 15 Pages

RS (14) DOT/FAA/CT-TN94/42

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *HEAT, *RELEASE, *COMPARISON, *AIRCRAFT

CORRELATION, LABORATORIES, MATERIALS, REPRODUCIBILITY, STANDARDS, TEST

AND EVALUATION, FIRES, USSR

ID (25) *Round robin, Repeatability

AB (27) A series of 150 comparative tests were run by four currently operating laboratories using heat release apparatuses compliant with present FAA/JAR standards and the ATI Russian Institute of Aviation Materials (VIAM) designed heat release apparatus. The evaluation of data showed little or no correlation between the subject apparatus and the four compliant apparatuses. Heat release, Fire test, Reproducibility, Repeatability, Evaluation

AN (1) AD-A285 855/XAG

FG (2) 070400

061100

070200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Simultaneous Gas-Chromatographic Determination of Four Toxic Gases Generally Present in Combustion Atmospheres.

DN (9) Final rept.

AU (10) Endecott, Boyd R.

Sanders, Donald C.

Chaturvedi, Arvind K.

RD (11) Sep 1994

PG (12) 12 Pages

RS (14) DOT/FAA/AM-94/18

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ATMOSPHERES, *COMBUSTION, *TOXICITY, *GASES, *GAS CHROMATOGRAPHY

AIRCRAFT CABINS, ATMOSPHERICS, CARBON DIOXIDE, CARBON MONOXIDE, CHROMATOGRAPHS, COMBUSTION PRODUCTS, CYANIDES, DETECTORS, DIOXIDES,

FABRICS, FILTRATION, HYDROGEN CYANIDE, HYDROGEN SULFIDE,

INHALATION,

INLETS, MATERIALS, MEASUREMENT, MIXTURES, MOLECULAR SIEVES,

NITROGEN,

OXYGEN, PARTICULATES, PASSENGERS, RESPIRATION, SAMPLING,

SENSITIVITY,

SMOKE, SULFIDES, SULFUR, THERMAL CONDUCTIVITY, TIME, TOXICOLOGY,

VELOCITY, VOLUME, WATER VAPOR, BREATHING APPARATUS, WOOLEN

TEXTILES,

INORGANIC COMPOUNDS

ID (25) Simultaneous, Wool, Modacrylic fabric

AB (27) Measurement of combustion gases produced by burning aircraft cabin materials poses a continuing limitation for smoke toxicity research.

Since toxic effects of gases depend on both their concentrations and duration of exposures, frequent atmosphere sampling is necessary to

define the concentration-time curve. A gas chromatographic method was developed for the simultaneous analyses of carbon monoxide (CO),

hydrogen sulfide (H₂S), sulfur dioxide (SO₂), and hydrogen cyanide

(HCN). The method utilized an MTI M200 dual-column gas chromatograph

(GC) equipped with 4-m molecular sieve-5A and 8-m PoraPlot-U capillary

columns and two low-volume, high-sensitivity thermal conductivity

detectors. Detectability (ppm)/retention times (seconds) for the gases

were: CO (100/28); H₂S (50/26); SO₂ (125/76); HCN (60/108). The method

was effective for determining these gases in mixtures and in the

combustion atmospheres generated by burning wool (CO, HCN, and H₂S) and

modacrylic (CO and HCN) fabrics. Common atmospheric gaseous or

combustion products (oxygen, carbon dioxide, nitrogen, water vapor, and

other volatiles) did not interfere with the analyses. However,

filtration of the combustion atmospheres was necessary to prevent

restriction of the GC sampling inlet by smoke particulates. The speed,

sensitivity, and selectivity of this method make it suitable for smoke

toxicity research and for evaluating performance of passenger

protective breathing equipment. Inhalation toxicology, Combustion

gases, Carbon monoxide, Hydrogen sulfide, Sulfur dioxide, Hydrogen

cyanide, Wool, Modacrylic fabric

AN (1) AD-A289 263/XAG

FG (2) 050800
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) **The Controller Memory Guide. Concepts from the Field.**

DN (9) Technical note

AU (10) Stein, Earl S.

Bailey, Jim

RD (11) Sep 1994

PG (12) 44 Pages

RS (14) DOT/FAA/CT-TN94/28

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *MEMORY(PSYCHOLOGY), *AIR TRAFFIC CONTROLLERS SKILLS, HUMANS, AIR TRAFFIC CONTROL SYSTEMS, MEMORY DEVICES, COMMAND

AND CONTROL SYSTEMS, ERRORS, RESOURCES

ID (25) SHORT TERM MEMORY

AB (27) Memory is an elusive human ability which both helps and hinders air traffic controllers' performance. This document was developed based on the ideas of controllers themselves when they were asked what they did to manage their memory resources. The guide is a job aide meant to help controllers think about what they do and about the little things they could use to help them reduce the possibilities for errors based on memory lapses. The material is presented in graphical cartoon format along with a very direct and minimalized text narrative. The goal was to provide the concepts in a readable format that controllers could review when they had the time. The issues covered in the guide all relate to memory in one way or another, but in many cases transcend memory issues alone, and look at the more basic issue of any person-machine system performance. Human and system performance are the bottom line in any complex command and control system such as air traffic control.

AN (1) AD-A290 835/XAG

FG (2) 010500

060100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) **Terminal Area Forecasts-Fiscal Years 1993-2010.**

RD (11) 01 Sep 1994

PG (12) 557 Pages

RS (14) FAA-APO-94-11

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIRPORT CONTROL TOWERS UNITED STATES, AIRCRAFT INDUSTRY, CONTRACTS, RADAR, TOWERS, AERONAUTICS, PLANNING, AIRPORTS, AIR TRANSPORTATION, APPROACH

AB (27) This report contains forecasts of aviation activity of 875 airports in the United States for fiscal years 1993-2010. These include 401 airports with FAA air traffic control towers and radar approach control services and 29 FAA contract towers. For each airport, detailed forecasts are made for the four major users of the air traffic system: air carriers, air taxi/commuters, general aviation, and military. Summary table contain national, FAA regional, and State aviation data and other airport specific highlights. The forecasts have been prepared to meet the budget and planning needs of the FAA and to provide airport specific information that can be used by State and local aviation authorities, the aviation industry, and the general public.

AN (1) AD-A283 839/XAG

FG (2) 010600

170900

090100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) **Test and Evaluation Master Plan (TEMP) for Fixed Ground Antenna Radomes (FGAR).**

DN (9) Technical note

AU (10) Baker, Leonard H.

RD (11) Aug 1994

PG (12) 50 Pages

RS (14) DOT/FAA/CT-TN93/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ANTENNAS, *RADOMES, *GROUND BASED ARRAYS, BEACONS, INSTALLATION, PHASED ARRAYS, RADAR, SEARCH RADAR,

SITES, SPECIFICATIONS, SURVEILLANCE, TEST AND EVALUATION, CIVIL AVIATION, MONOPULSE RADAR

ID (25) FGAR(Fixed Ground Antenna Radomes), TEMP(Test and Evaluation Master Plan), Master plan, Fixed ground, Mode S, BOS(Beacon-Only-Sites), Collocation, FAA(Federal Aviation Administration), Federal Aviation Administration

AB (27) The Federal Aviation Administration (FAA) Fixed Ground Antenna Radome

(FGAR) Test and Evaluation Master Plan (TEMP) is prepared by the Program Manager (PM) and Associate Program Manager for Test (APMT). It outlines the Test and Evaluation (T&E) process that will be used to ensure the project meets the requirements of the project specification and the system and subsystem requirements allocated to the project. The FAA TEMP contains FGAR Operational Test and Evaluation (OT&E) test requirements and OT&E schedule durations. The purpose of the FGAR project is to provide new and larger radomes for en route surveillance radars that require collocated Mode Select Beacon System (Mode S) installations. As a result of the FAA's program to implement Mode S, many existing en route surveillance radar radomes cannot accommodate the additional space required by the new Mode S antennas. The FGARs will provide an environmental enclosure for a variety of single or dual-face monopulse beacon phased array and en route surveillance radar installations. Installations will be comprised of an installation mix ranging from beacon-only-sites (BOS) to collocated beacon and en route surveillance radar sites. Fixed Ground Antenna Radome (FGAR), Test and Evaluation (T&E), Operational Test and Evaluation (OT&E)

- AN (1) AD-A283 963/XAG
- FG (2) 250200
- CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
- TI (6) 23-Gigahertz (GHz) Digital Low Density Radio Communications Link (LDRCL) operational Test and Evaluation (OT&E) Integration and OT&E Operational Final Test Report.
- DN (9) Technical note
- AU (10) Melillo, Michael R.
- RD (11) Aug 1994
- PG (12) 35 Pages
- RS (14) DOT/FAA/CT-TN94/27
- RN (18) XH-XD
- RC (20) Unclassified report
- DE (23) *OFF THE SHELF EQUIPMENT, *DIGITAL COMMUNICATIONS, *RADIO LINKS, *COMMERCIAL EQUIPMENT DEPLOYMENT, INTEGRATION, LOW DENSITY, MISSIONS, RADIO EQUIPMENT, SITES, SPECIFICATIONS, TEST AND EVALUATION, TEXAS
- AB (27) This report contains the results of the Operational Test and Evaluation (OT&E) Integration and OT&E Operational Testing of the Commercial-Off-The-Shelf (COTS) Low Density Radio Communications Link's (LDRCL) 23-gigahertz (GHz) digital radio system. The OT&E testing was accomplished by first testing the LDRCL equipment against its equipment

specification (FAA-E-2853A), and then performing OT&E testing at the key site (Keller, Texas). These tests proved that the 23-GHz LDRCL equipment can fulfill its mission in the National Airspace System (NAS) and that it is suitable and effective. Based on the test results, it is concluded that the 23-GHz LDRCL equipment is qualified for operational deployment. Low Density Radio Communications Link (LDRCL), 23-GHz Digital Radio System

- AN (1) AD-A284 232/XAG
- FG (2) 060500
- CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE
- TI (6) The Applicability of Commercial Glare Test Devices in the Aeromedical Certification of Pilot Applicants.
- DN (9) Final rept.
- AU (10) Nakagawara, Van B. Montgomery, Ronald W. Wood, Kathryn J.
- RD (11) Aug 1994
- PG (12) 20 Pages
- RS (14) DOT/FAA/AM-94/15
- RN (18) XH-XD
- RC (20) Unclassified report
- DE (23) *GLARE, *PILOTS, *VISUAL ACUITY, *MEDICAL SERVICES, *AVIATION MEDICINE ACUITY, ADDITION, AIR, BATS, BRIGHTNESS, CONTRAST, COSTS, ENVIRONMENTS, EYE, GUIDANCE, HEALTH, HUMANS, OPERATION, PERSONNEL, POLICIES, REQUIREMENTS, SCORING, SENSITIVITY, SURGEONS, TEST AND EVALUATION, TOOLS, TRAINING, VISION
- AB (27) In his FY-92/93 Annual Program Guidance and Current Policy Statement, the Federal Air Surgeon requested continued investigation of new testing modalities, such as glare vision testing, as to their relevance to medical certification. Glare sensitivity is a normal age-related physiological change depriving the human visual system of vital information. An instrument that can effectively detect and measure visual performance loss from glare in a clinical environment would be a valuable tool for an Aviation Medical Examiner evaluating pilot applicants. This study evaluated several commercially available glare tests using factors of measured visual performance loss and relevant clinical features. Sixteen subjects (32 eyes) with normal ocular health were tested with a Brightness Acuity Tester (BAT), Penlight Test, MCT

8000, and a Miller-Nadler Glare Tester to determine each instrument's ability to detect visual acuity changes under simulated glare conditions. In addition, individual glare testers were subjectively rated by examining personnel as to clinical features important for use in an aeromedical screening, such as cost, training and space requirements, ease of operation and scoring, etc. Our results suggest that the BAT by Mentor O&O, Inc., presented preferred test sensitivity and clinical features for use in screening glare disability. The other procedures either demonstrated an inability to detect visual acuity changes under simulated glare conditions or exhibited undesirable clinical features for use in aeromedical glare screening. These data may be used in evaluating future glare testers. Guidelines are provided for incorporating glare testing into the aeromedical certification process. Vision, Acuity, Glare, Contrast sensitivity, Certification

AN (1) AD-A284 233/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Unreported Medications Used in Incapacitating Medical Conditions Found in Fatal Civil Aviation Accidents.

DN (9) Final rept.

AU (10) Canfield, Dennis V.

Fleming, Jo

Hordinsky, Jerry

Veronneau, Stephen

RD (11) Aug 1994

PG (12) 8 Pages

RS (14) DOT/FAA/AM-94/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *AVIATION MEDICINE, *MEDICAL EXAMINATION AIR, ALCOHOLS, CARBON MONOXIDE, CARDIOVASCULAR DISEASES, COMPUTERS,

CONTAINERS, CYANIDES, DRUGS, FREQUENCY, ILLNESS, INCAPACITATION, LABORATORIES, MANAGEMENT, MEDICINE, PAPER, PATHOLOGISTS, PILOTS,

TIME,

TOXICOLOGY, UNITED STATES, MEDICAL SERVICES

ID (25) FAA(Federal Aviation Administration)

AB (27) One of the major concerns in aviation medicine is sudden incapacitation of the pilot resulting in a fatal accident. The Office of Aviation Medicine (OAM) for the Federal Aviation Administration (FAA) is charged

with the medical certification of pilots. All pilots are required by OAM to receive a medical examination by a qualified AME before they can receive medical certification. The pilots must complete a Medical Certification Form listing all of their medical conditions and medications. The Civil Aeromedical Institute's (CAMI) Toxicology and Accident Research Laboratory analyzes all fatal aviation accidents that occur in the United States. This paper reports the cases where drugs used in the treatment of incapacitating illnesses were found along with the frequency with which these drugs and illnesses had been reported on the pilots' medical examinations. Specimens were collected by pathologists near the accident and placed in evidence containers provided by CAMI. These samples were refrigerated and shipped by overnight air. Upon receipt the specimens were inventoried and accessioned for the analysis of drugs, alcohol, carbon monoxide, and cyanide. All data collected by the laboratory were electronically entered into a computer for future analysis. We identified those cardiovascular, neurological, and psychiatric drugs most likely to be associated with the treatment of potentially incapacitating illness. Pilots using drugs for neurological and psychiatric conditions would normally not receive their medical certification. A full review of the complete accident file was conducted in several of the cases reported in this research. The Medical conditions, Unreported, Drugs, Aviation

AN (1) AD-A284 372/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Unreported Medications Used in Incapacitating Medical Conditions Found in Fatal Civil Aviation Accidents.

DN (9) Final rept.

AU (10) Canfield, Dennis V.

Fleming, Jo

Hordinsky, Jerry

Veronneau, Stephen

RD (11) Aug 1994

PG (12) 8 Pages

RS (14) DOT/FAA/AM-94/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *AVIATION MEDICINE

AIR, ALCOHOLS, CARBON MONOXIDE, CARDIOVASCULAR DISEASES, COMPUTERS,

CONTAINERS, CYANIDES, DISEASES, DRUGS, FREQUENCY, ILLNESS, INCAPACITATION, LABORATORIES, MANAGEMENT, MEDICAL EXAMINATION, MEDICINE, MONOXIDES, PAPER, PATHOLOGISTS, PILOTS, TIME, TOXICOLOGY, UNITED STATES, WOUNDS AND INJURIES

ID (25) FAA(Federal Aviation Administration)

AB (27) One of the major concerns in aviation medicine is sudden incapacitation of the pilot resulting in a fatal accident. The Office of Aviation Medicine (OAM) for the Federal Aviation Administration (FAA) is charged with the medical certification of pilots. All pilots are required by OAM to receive a medical examination by a qualified AME before they can receive medical certification. The pilots must complete a Medical Certification Form listing all of their medical conditions and medications. The Civil Aeromedical Institute's (CAMI) Toxicology and Accident Research Laboratory analyzes all fatal aviation accidents that occur in the United States. This paper reports the cases where drugs used in the treatment of incapacitating illnesses were found along with the frequency with which these drugs and illnesses had been reported on the pilots' medical examinations. Specimens were collected by pathologists near the accident and placed in evidence containers provided by CAMI. These samples were refrigerated and shipped by overnight air. Upon receipt the specimens were inventoried and accessioned for the analysis of drugs, alcohol, carbon monoxide, and cyanide. All data collected by the laboratory were electronically entered into a computer for future analysis. We identified those cardiovascular, neurological, and psychiatric drugs most likely to be associated with the treatment of potentially incapacitating illness. Pilots using drugs for neurological and psychiatric conditions would normally not receive their medical certification. A full review of the complete accident file was conducted in several of the cases reported in this research. The Toxicology and Accident Research Laboratory received specimens from 2192 pilots for postmortem toxicology analysis between 1987 to 1992

AN (1) AD-A284 760/XAG

FG (2) 060400
070300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Elimination of Quinine in Two Subjects After Ingestion of Tonic Water:
An Exploratory Study.

DN (9) Final rept.

AU (10) White, Vicky L.

Canfield, Dennis V.

Hordinsky, Jerry R.

RD (11) Aug 1994

PG (12) 10 Pages

RS (14) DOT/FAA/AM-94/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *QUININE, *INGESTION(PHYSIOLOGY)

ADDITION, ADDITIVES, ALCOHOLS, AVIATION ACCIDENTS, BLOOD, BOTTLES, CONSUMPTION, DETECTION, LABORATORIES, LENGTH, MALARIA, MALES, MUSCLES,

ORGANIZATIONS, PILOTS, STANDARDS, TIME, URINE, WATER

ID (25) Tonic water

AB (27) Biological specimens from 8 fatal aviation accidents out of 775 fatal aviation accidents analyzed in 1991 and 1992 were found to contain quinine. In one case, the investigators sought to identify the source of quinine found in the pilot. It was suggested that the quinine might have come from the consumption of tonic water. Since no recent use of quinine or tonic water could be found, the investigators asked how long quinine could be detected in a urine specimen. A limited research project was undertaken to provide a preliminary range of the approximate length of time quinine could be detected in urine and blood. Each of 2 male subjects was given a 20 oz. bottle of tonic water, which contained 35 mg of quinine. Quinine was detected using standard laboratory TLC and HPLC methods. Quinine has such diverse applications as a treatment for muscle cramps and malaria, in addition to being an additive in tonic water. Since adverse effects have been identified at plasma concentrations between 10-15 microgram/mL, no performance effects would be expected from the maximum concentrations of quinine found (0.291 microgram/mL) in this study after the ingestion of one 20 oz. bottle of tonic water. However, based on this study, the possibility of prolonged detection (over 8 days) of quinine should (a) serve as a warning against using this as a sign of recent use of quinine directly or in association with alcohol, and (b) alert the investigators to inquire about disorders or conditions that impair performance, but for which quinine treatment was terminated days before the accident Tonic water, Quinine

AN (1) AD-A284 763/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of an Unlighted Swinging Airport Sign.

DN (9) Technical note
AU (10) Katz, Eric S.
RD (11) Aug 1994
PG (12) 13 Pages
RS (14) DOT/FAA/CT-TN94/29
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIRPORTS, *AVIATION SAFETY, *VISUAL AIDS
ANGLES, BLAST, DEFLECTION, DISPLACEMENT, GUSTS, TEST AND
EVALUATION,
VELOCITY, WIND, LEGIBILITY, VISIBILITY
ID (25) *Airport signs
AB (27) An unlighted swinging airport sign was evaluated at the Federal
Aviation Administration Technical Center. The purpose of the evaluation
was to determine the readability of the sign under varying wind and jet
blast conditions. Results indicate that the sign is readable under all
of the test conditions except when subjected to wind speeds of
approximately 35 to 40 knots with gusts produced by the additive effect
of the ambient winds and the jet blast. Even under this condition,
readability of the sign remained adequate except at the most extreme
angular displacement. Unlighted swinging airport sign, Readability,
Deflection angle

AN (1) AD-A285 330/XAG
FG (2) 010307
**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

TI (6) FAA Vertical Flight Bibliography, 1962 - 1994.
DN (9) Bibliography rept.
AU (10) Smith, Robert D.
RD (11) Aug 1994
PG (12) 289 Pages
RS (14) DOT/FAA/RD-94/17
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *BIBLIOGRAPHIES, *VERTICAL TAKEOFF AIRCRAFT
AIRCRAFT, FLIGHT, TILT ROTOR AIRCRAFT, HELICOPTERS, HELIPOINTS, TILT
WING AIRCRAFT, TERMINAL FLIGHT FACILITIES, POWERED LIFT, VEHICLES,
AERONAUTICAL ENGINEERING
ID (25) Veriports
AB (27) This bibliography has been assembled as an aid to those who are
interested in research, engineering, and development of vertical flight

aircraft including helicopters, tiltrotor, and tiltwing vehicles. The
intended audience includes people within the Federal Aviation
Administration (FAA), in industry, and in state and local governments.
Reports included in this bibliography are FAA documents specifically
related, in whole or in part, to vertical flight aircraft. The majority
of the documents have been sponsored or authored by the research,
engineering, and development elements of the FAA. Bibliography,
Helicopter, Heliport, Powered-lift vehicles, Rotorcraft, Tiltrotor,
Veriport

AN (1) AD-A285 351/XAG
FG (2) 070300
010200
070400
060400
**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE**
**TI (6) Elimination of Quinine in Two Subjects After Ingestion of Tonic Water:
An Exploratory Study.**
DN (9) Final rept.
AU (10) White, Vicky L.
Canfield, Dennis V.
Hordinsky, Jerry R.
RD (11) Aug 1994
PG (12) 10 Pages
RS (14) DOT/FAA/AM-94/16
RN (18) XH-FAA-AM
RC (20) Unclassified report
DE (23) *PILOTS, *QUININE, *ELIMINATION, *INGESTION(PHYSIOLOGY)
ADDITIVES, ALCOHOLS, AVIATION ACCIDENTS, BLOOD, CONSUMPTION,
DETECTION,
LENGTH, MALARIA, MALES, MUSCLES, STANDARDS, TIME, URINE, WATER,
BIOLOGY, BLOOD PLASMA, THIN LAYER CHROMATOGRAPHY, LIQUID
CHROMATOGRAPHY
ID (25) *Tonic water, HPLC(High Performance Liquid Chromatography), High
performance
AB (27) Biological specimens from 8 fatal aviation accidents out of 775 fatal
aviation accidents analyzed in 1991 and 1992 were found to contain
quinine. In one case, the investigators sought to identify the source
of quinine found in the pilot. It was suggested that the quinine might
have come from the consumption of tonic water. Since no recent use of
quinine or tonic water could be found, the investigators asked how long

quinine could be detected in a urine specimen. A limited research project was undertaken to provide a preliminary range of the approximate length of time quinine could be detected in urine and blood. Each of 2 male subjects was given a 20 oz. bottle of tonic water, which contained 35 mg of quinine. Quinine was detected using standard laboratory TLC and HPLC methods. Quinine has such diverse applications as a treatment for muscle cramps and malaria, in addition to being an additive in tonic water. Since adverse effects have been identified at plasma concentrations between 10- 15 microg/mL, no performance effects would be expected from the maximum concentrations of quinine found (0.291 microg/mL) in this study after the ingestion of one 20 oz. bottle of tonic water. However, based on this study, the possibility of prolonged detection (over 8 days) of quinine should (a) serve as a warning against using this as a sign of recent use of quinine directly or in association with alcohol, and (b) alert the investigators to inquire about disorders or conditions that might impair performance, but for which quinine treatment was terminated days before the accident. Tonic water, Quinine.

AN (1) AD-A283 052/XAG

**FG (2) 040200
170900**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Terminal Doppler Weather Radar Build 5A Operational Test and Evaluation (OT&E) Integration and OT&E Operational Test Plan.

DN (9) Technical note

AU (10) Martinez, Radame
Guthlein, Peter
Viveiros, Steven
Wedge, Donne

RD (11) Jul 1994

PG (12) 46 Pages

RS (14) DOT/FAA/CT-TN94-19

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR, *DOPPLER RADAR
TEST AND EVALUATION, ATTENTION, WIND SHEAR, AIR TRAFFIC CONTROL SYSTEMS

AB (27) The Terminal Doppler Weather Radar (TDWR) Build 5A Enhancement Operational Test and Evaluation (OT&E) Integration and OT&E Operational Test Plan provides the overall philosophy and approach to Build 5A OT&E testing, and identifies OT&E objectives responsibilities, and

resources. The TDWR Build 5A enhancement provides connectivity to the Low Level Wind Shear Alert System (LLWAS) II to display LLWAS II wind data along with TDWR hazardous weather data on TDWR Geographical Situation Displays (GSD) and Ribbon Display Terminals (RDT). The TDWR Build 5A OT&E is scheduled to occur at the TDWR site in Memphis, TN, March through May 1994

AN (1) AD-A283 813/XAG

FG (2) 050900

050800

050600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Relationships of Type A Behavior with Biographical Characteristics and Training Performance of Air Traffic Controllers.

DN (9) Final rept.

AU (10) Nye, L. G.
Schroeder, D. J.

Dollar, C. S.

RD (11) Jul 1994

PG (12) 14 Pages

RS (14) DOT/FAA/AM-94/13

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *STRESS(PSYCHOLOGY), *APTITUDE TESTS,
*PERSONALITY TESTS

TRAINING, JOB TRAINING, PERFORMANCE(HUMAN), INDUSTRIAL PSYCHOLOGY, TEST

CONSTRUCTION(PSYCHOLOGY), PREDICTIONS, PERSONNEL SELECTION, HEALTH,

BEHAVIOR, LONG RANGE(TIME)

ID (25) ATCS(Air Traffic Control Specialists), JAS(Jenkins Activity Survey), AS(Achievement Striving), II(Impatience Irritability), Job success, Type A behaviors

AB (27) While there has been a considerable amount of research concerning the relationships between various cognitive measures and the selection and subsequent performance of Air Traffic Control Specialists (ATCSs), data concerning the potential importance of personality factors are quite limited. As part of an expanded research program, selected personality measures and biographical questionnaires have been administered to ATCSs at the time of their entry into the FAA Academy Nonradar Screen

Program. A considerable body of research surrounds the Jenkins Activity Survey (JAS) as a measure of Type A behavior, coronary proneness, and other health problems. More recently, a revised JAS scoring procedure has been developed for Achievement Striving (AS) and Impatience-Irritability (II) scales; those scales have been significantly and differentially related to job performance, academic achievement, job satisfaction, and negative effect (e.g., depression). The JAS and a biographical questionnaire were administered to 474 ATCS students at the beginning of the nine-week screening program. Scores on the traditional JAS, AS, and II scales were compared with measures of FAA Academy performance, and attitudinal and biographical data. Analyses of the JAS questions confirmed the presence of the As and II factors. In contrast to previous research, which documented a positive relationship between AS and academic achievement in college, correlations between As and Academy achievement were non-significant. Given the historical use of the JAS and current support for the existence of the new scales, longitudinal studies could examine the effectiveness of the JAS in predicting both the long-term job success of air traffic controllers and prospective health-related problems that might arise

AN (1) AD-A283 849/XAG

FG (2) 131200

010300

010600

050400

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Proceedings of the FAA Inspection Program Area Review, Held in Ames, Iowa on April 5-7, 1994.

DN (9) Final rept.

AU (10) Smith, Christopher

RD (11) Jul 1994

PG (12) 922 Pages

RS (14) DOT/FAA/CT-94/64

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *AIRCRAFT MAINTENANCE, *AIR TRANSPORTATION DOCUMENTS, INSPECTION, RELIABILITY, SYMPOSIA, REPORTS, COMMERCIAL AIRCRAFT, MILITARY AIRCRAFT, AGING(MATERIALS), UNITED STATES GOVERNMENT

GOVERNMENT

ID (25) Federal aviation administration, Aging aircraft inspection

AB (27) This publication is a compendium of the Proceedings, of the FAA Inspection Program Area Review Presentations given at the Center for Aviation Systems Reliability held at Iowa state university at Ames, Iowa on April 5-7, 1994.

AN (1) AD-A285 626/XAG

FG (2) 010500

010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Minima Reduction Simulation Test Results.

DN (9) Technical rept.

AU (10) Billmann, Barry

Pugacz, Edward

Everberg, Carl

RD (11) Jul 1994

PG (12) 73 Pages

RS (14) DOT/FAA/CT-TN92/47

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *APPROACH LIGHTS, *FLIGHT SIMULATORS, *APPROACH INDICATORS

AIRCRAFT, APPROACH, AVAILABILITY, BENEFITS, CREWS, FLIGHT, GROUND

LEVEL, INTERNATIONAL, KANSAS, LANDING, LEARNING, MICROWAVE LANDING

SYSTEMS, NAVIGATION, REGIONS, RUNWAYS, SIGNALS, STANDARDS, TEST

AND

EVALUATION, WEATHER, FEASIBILITY STUDIES, QUESTIONNAIRES, SCENARIOS

AB (27) This report presents the results of tests conducted in a Beech-200 (B-200) simulator located at the Beech Learning Center in Wichita, Kansas, and operated by Flight-Safety International (FSI). The testing was conducted to examine the feasibility of reducing approach minimums below Category I by utilizing a highly accurate navigation signal, such as the Microwave Landing System (MLS), when standard Category II approach and runway lighting are not available. Results are presented which indicate that properly trained crews using flight director-equipped aircraft can operate to lower approach minima than standard Category I without fun Category II approach and runway lighting. Performance in the visual segment and touchdown performance is shown to be equivalent regardless of the availability of touchdown zone or runway centerline lighting. The benefits of a Category II approach lighting system (ALSF-2) are mitigated by the fact that when the aircraft breaks out of weather at the lower decision heights (DH's), i.e., 150 feet above ground level (AGL), most of the approach light system is already behind the aircraft. Recommendations are made

for further testing in actual aircraft. MLS, DH, Flight director.

AN (1) AD-A286 295/XAG

**FG (2) 210400
010300**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Fuselage Burnthrough from Large Exterior Fuel Fires.

DN (9) Final rept.

AU (10) Webster, Harry

RD (11) Jul 1994

PG (12) 128 Pages

RS (14) DOT/FAA/CT-90-10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FUELS

FIRES, FLAMES, CONFIGURATIONS, FUEL BURN UP, PENETRATION

ID (25) Fuel fires

AB (27) The burnthrough resistance of aircraft fuselages to external fuel fire was investigated in this test series. Three tests were conducted in a wheels-up mode and three in the wheels-down configuration. A comprehensive data base was developed documenting fire entry paths, burnthrough time, and cabin environmental conditions. The overall resistance of the two test intact aircraft fuselages to fire penetration was documented.

AN (1) AD-A281 002/XAG

FG (2) 250200

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Data Multiplexing Network (DMN) Phase IIIA Operational Test and
Evaluation (OT&E) Integration and OT&E Operational Final Test Report.**

DN (9) Technical note

AU (10) Riordan, Ralph

Malitsky, Stephen

Bell, Wayne E.

RD (11) Jun 1994

PG (12) 43 Pages

RS (14) DOT/FAA/CT-TN94/9

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *MULTIPLEXING, *COMMUNICATIONS NETWORKS

CONTROL CENTERS, DEPLOYMENT, DIVISION, INTEGRATION, MANAGEMENT,
MODEMS,
NETWORKS, OFF THE SHELF EQUIPMENT, PHASE, TEST AND EVALUATION,
TIME,

TRAFFIC, AIR TRAFFIC CONTROL SYSTEMS, OPERATIONAL EFFECTIVENESS
ID (25) DMN(Data Multiplexing Network)

AB (27) This test report describes the results of the Operational Test and Evaluation (OT&E) Integration and OT&E Operational testing of the Statistical Time Division Multiplexer (STDM) Data Multiplexing Network (DMN) Phase IIIA commercial-off-the-shelf (COTS) equipment. Unit level tests were conducted at the Federal Aviation Administration (FAA) Technical Center and OT&E Integration and OT&E Operational tests were conducted at the Anchorage Air Route Traffic Control Center (ARTCC) and Minneapolis ARTCC. The equipment tested was the Type-I (DCX-808), Type-2 (DCX-832 and DCX-844), and the Type-III (DCX-850). The Cray STDM equipment was tested with the Codex 3600 modems. No problems were found during the unit level testing or OT&E Integration and OT&E Operational testing. The FAA Technical Center (ACW-400A) recommends deployment of the Cray Statistical Multiplexer equipment (Type I, Type II, and Type III). Data Multiplexing Network (DMN), Statistical Time Division Multiplexer (STDM), Operational Test and Evaluation (OT&E)

AN (1) AD-B195 074/XAG

**FG (2) 010200
010200
190900**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Transport Aircraft Survivability Program: Flight Systems Vulnerability
Assessment Methodology.**

DN (9) Final rept. 28 Feb 92-10 Jun 94

AU (10) Clough, Bruce T.

Rasmussen, Steve

Smith, Robert

RD (11) Jun 1994

PG (12) 74 Pages

PJ (16) FAAF

TN (17) 91

RN (18) WL*-TR-94-3140

XC-WL*

RC (20) Unclassified report

NO (21) Original contains color plates. All DTIC reproductions will be in black and white.

AL (22) Distribution: DTIC users only., This document contains export-controlled technical data.
DE (23) *COMMERCIAL AIRCRAFT, *EXPLOSIONS, *TRANSPORT AIRCRAFT TERRORISTS, METHODOLOGY, AIRCRAFT, DAMAGE, SURVIVABILITY, LOADING(HANDLING), VULNERABILITY, FLIGHT, INTERNAL, HISTORY, CARGO, MENTAL ABILITY, DETERMINATION
ID (25) EXPORT CONTROL, 62201F, 01, 6
DL (33) 12
57

AN (1) AD-A280 253/XAG
FG (2) 010200
010309
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) The Effects of Cold Exposure on Wet Aircraft Passengers: A Review.
DN (9) Final rept.
AU (10) Garner, Robert P.
Wilcox, Bruce C.
England, Harvey M.
Nakagawara, Van B.
RD (11) May 1994
PG (12) 13 Pages
RS (14) DOT/FAA/AM-94/10
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AVIATION ACCIDENTS, *PASSENGER AIRCRAFT, *WOUNDS AND INJURIES ACCIDENTS, AIRCRAFT CABINS, BENEFITS, DEATH, ENVIRONMENTS, HEALTH, HYPOTHERMIA, PROTECTION, RESPONSE, RISK, SMOKE, SPRAYS, TEMPERATURE,
TEMPERATURE CONTROL, VELOCITY, WATER, WETTING, WIND, COMMERCIAL AIRCRAFT, FAILURE(MECHANICS), TEMPERATURE CONTROL
AB (27) The incorporation of a cabin water spray system (CWSS) aboard commercial passenger aircraft has been suggested as a mechanism of reducing passenger death and injury from the fire and smoke commonly associated with aircraft accidents. A potential health risk associated with a CWSS is the physiological stress that would be imposed upon an individual by being wet from a CWSS in the aircraft cabin and then evacuated into a cold environment. The severity of this type of exposure would be proportional to the degree to which the individual was doused with water and the wind speed and inversely proportionally to the ambient temperature. The physiological responses to partial

wetting and subsequent exposure to cold environmental conditions have not been studied. The effects of cold exposure as well as the degree of protection provided to the individual, particularly the cardiorespiratory system, by CWSS would need to be fully investigated to determine if the survival benefits of a CWSS outweigh the potential health risks. Aviation, Thermoregulation, Hypothermia.

AN (1) AD-A280 309/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Test and Evaluation Plan for Precision Distance Measuring Equipment (DME/P) Interrogators. Field Test Plan.
DN (9) Technical note
AU (10) Warburton, John
RD (11) May 1994
PG (12) 24 Pages
RS (14) DOT/FAA/CT-TN92/31
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *INTERROGATORS
DISTANCE MEASURING EQUIPMENT, PRECISION, REQUIREMENTS, TEST AND EVALUATION
ID (25) *Microwave landing systems, Flight testing, Field tests, Operational effectiveness
AB (27) This test plan outlines the Test and Evaluation (T&E) process, and details the field T&E needed to support the Precision Distance Measuring Equipment (DME/P) interrogator procurement. DME/P Interrogator Test Plan, DME/P interrogator Requirements, Flight test procedures.
AN (1) AD-A280 311/XAG
FG (2) 170703
170300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) VHF Direction Finder (VDF) Operational Test and Evaluation (OT&E) integration and OT&E Operational Test Logs and Data.
DN (9) Technical note
AU (10) Barto, Eugene
Bernheisel, Robert
Dyson, John

Pino, Joseph
RD (11) May 1994
PG (12) 102 Pages
RS (14) DOT/FAA/CT-TN94/13
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *DIRECTION FINDING, *AIRCRAFT, *POSITION FINDING
FLIGHT TESTING, AUTOMATIC PILOTS, HIGH FREQUENCY, KEYBOARDS,
MAINTENANCE, MIXER TUBES, SOLID STATE ELECTRONICS, TEST AND
EVALUATION,
VERY HIGH FREQUENCY, DATA ACQUISITION
AB (27) Preliminary Operational Test and Evaluation (OT&E) Integration and OT&E
operational testing was conducted on the Very High Frequency (VHF)
direction Finder (VDF) at the Green Bay, WI, Automated Flight Service
Station (AFSS), from March 29 through April 9, 1993. Formal OT&E
integration and OT&E Operational testing was conducted from June 21
through June 24. Testing was categorized into the areas of integration
and maintenance, display and keyboard functions, and operational flight
testing. This document provides the logs and processed data from the
OT&E Integration and OT&E Operational tests. This document supplements
the VHF Direction Finder (VDF) Operational Test and Evaluation (OT&E)
Integration and OT&E Operational Test Report, DOT/FAA/CT-TN94/12.
Direction Finder (DF), Very High Frequency Direction Finder (VDF),
Automated Flight Service Station (AFSS).

AN (1) AD-A280 312/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) VHF Direction Finder (VDF) Operational Test and Evaluation (OT&E) integration and OT&E Operational Test Report.
DN (9) Technical note
AU (10) Barto, Eugene
Bernheisel, Robert
Dyson, John
Pino, Joseph
RD (11) May 1994
PG (12) 32 Pages
RS (14) DOT/FAA/CT-TN94/12
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *DIRECTION FINDING, *POSITION FINDING, *AIRCRAFT, *AIR NAVIGATION

HIGH FREQUENCY, TEST AND EVALUATION, VERIFICATION, VERY HIGH
FREQUENCY,
FLIGHT TESTING, ERRORS, COMPUTER PROGRAMS, ANTENNAS,
MAINTENANCE, RADIO
BEACONS
ID (25) AFSS(Automated Flight Service Station)
AB (27) This report provides the results of the Operational Test and Evaluation
(OT&E) Integration and OT&E Operational testing that was conducted on
the new FA-10121 Very High Frequency (VHF) Direction Finder (VDF) at
the Green Bay, WI, Automated Flight Service Station (AFSS). It covers
testing accomplished to verify that the system meets the requirements
identified in the Direction Finder (DF) Test Verification Requirements
Traceability Matrix (TVRTM) from the OT&E Integration and OT&E
Operational Test Plan. Based on this testing, it is concluded that the
system should be deployed. Direction Finder (DF), Very High Frequency
Direction Finder (VDF), Automated Flight Service Station (AFSS).

AN (1) AD-A280 426/XAG
FG (2) 170900
040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Terminal Doppler Weather Radar (TDWR) Build 5 Test and Evaluation Master Plan (TEMP).
DN (9) Technical note
AU (10) Turcich, Elizabeth
Cranston, Robert
RD (11) May 1994
PG (12) 81 Pages
RS (14) DOT/FAA/CT-TN94/2
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *METEOROLOGICAL RADAR, *DOPPLER RADAR
ALGORITHMS, AUGMENTATION, INTEGRATION, LOW LEVEL, RESOURCES,
TERMINALS,
TEST AND EVALUATION, WEATHER, WIND SHEAR
AB (27) This document presents the Terminal Doppler Weather Radar (TDWR), Build
5 enhancement, Test and Evaluation Master Plan (TEMP). This Build 5
TEMP identifies Operational Test and Evaluation (OT&E) objectives,
responsibilities, resources, schedules, and critical test issues. The
Build 5 enhancement consists of a Build 5A which provides connectivity
to the Low Level Wind Shear Alert System (LLWAS) II, and a Build 5B
which provides connectivity to an LLWAS III. Build 5A displays LLWAS II

wind data along with TDWR hazardous weather data on TDWR Geographic Situation Displays (GSD) and Ribbon Display Terminals (RDT). Build 5B provides additional capabilities such as having a Microburst Shear Integration Algorithm (MSIA), TDWR/LLWAS III Integration Algorithm, 15-day archiving and TDWR, LLWAS II and LLWAS III data integration. Terminal Doppler Weather Radar (TDWR), Test and Evaluation Master Plan, Build 5, Operational Test and Evaluation (OT&E) .

AN (1) AD-A280 492/XAG

FG (2) 040200

010600

250100

120700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) AWOS Data Acquisition System (ADAS) Operational Test and Evaluation (OT&E) Integration and OT&E Operational Test Report.

DN (9) Technical note

AU (10) Greco, Michael

Hoover, Eric

Stratton, Jock

Sweeney, Pat

Schlain, Ed

RD (11) May 1994

PG (12) 157 Pages

RS (14) ACW-200A, DOT/FAA/CT-TN93/48

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DATA LINKS, *WEATHER FORECASTING, *ALL WEATHER AVIATION COMMUNICATIONS NETWORKS, DATA ACQUISITION, INTEGRATION, INTERFACES,

MONITORS, REAL TIME, REPLACEMENT, SIMULATION, SPECIFICATIONS, SWITCHING, TEST AND EVALUATION, DISTRIBUTED DATA PROCESSING, OPERATIONAL EFFECTIVENESS, REQUIREMENTS, DATA MANAGEMENT, INTEROPERABILITY

ID (25) AWOS(Automated Weather Observation System), ADAS(AWOS Data Acquisition System)

AB (27) The Automated Weather Observation System (AWOS) Data Acquisition System (ADAS) is a planned element of the National Airspace System (NAS) modernization program. The objective of the ADAS is to provide collection, processing, archiving, and distribution of aviation-oriented weather observation data in support of the NAS. This report presents the results of the ADAS Operational Test and Evaluation

(OT&E) Integration and OT and E operational testing performed at the Federal Aviation Administration (FAA) Technical Center between December 1992, and July 1993. All ADAS interfaces have been thoroughly tested either through simulation or integrated with live NAS subsystems. During OT and E testing, the ADAS was interfaced with live AWOSs and Automated Surface Observation Systems (ASOSs), and also the National Airspace Data Interchange Network II (NADIN II), Weather Message Switching Center Replacement (WMSCR), Coded Time Source (CTS), and Maintenance Processor Subsystem (MPS). The MPS was executing testcom software in lieu of operational Interim Monitor Control Software (IMCS). The Real-Time Weather Processor (RWP), Data Link Processor (DLP), and Local Communications Network (LCN) interfaces were partially verified using the ADAS prime development contractors' Interactive Process Simulator (IPS). Automated Weather Observation System (AWOS), AWOS Data Acquisition System(ADAS), National Airspace Data Interchange Network II(NADIN II)

AN (1) AD-A280 707/XAG

FG (2) 120500

010300

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK AERONAUTICAL CENTER

TI (6) A Review of Computer Evacuation Models and Their Data Needs.

DN (9) Final rept.

AU (10) Marcus, Jeffrey H.

RD (11) May 1994

PG (12) 14 Pages

RS (14) DOT/FAA/AM-94/11

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *COMPUTERS, *AIRCRAFT CABINS

COMMERCIAL AIRCRAFT, COMPARISON, DOCUMENTS, EVACUATION, HISTORY, MODELS, PARAMETERS, SAFETY, VALIDATION, DATA BASES

AB (27) This document reviews the history and current status of computer models of the evacuation of an airliner cabin. Basic concepts upon which evacuation models are based are discussed, followed by a review of the Civil Aeromedical Institute's efforts during the 1970s. A comparison is made of the three models available today (GA Model, AIREVAC, and EXODUS). The report then reviews parameters common to all models, and discusses literature available as a basis for these parameters. Finally, the report briefly discusses validation exercises for evacuation models. Computer model, Evacuation, Cabin safety.

AN (1) AD-A280 771/XAG
FG (2) 010200
010301
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Visual Meteorological Conditions (VMC) Right Turn Curved Approaches.
DN (9) Technical note Jul-Aug 92
AU (10) Weiss, Rosanne M.
Plotka, Marvin
RD (11) May 1994
PG (12) 225 Pages
RS (14) DOT/FAA/CT-TN93/24
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *HELICOPTERS, *AIRCRAFT LANDINGS, *TURNING(MANEUVERING)
ANGLES, APPROACH, CIRCULAR, HELIPTS, PILOTS, TEST AND EVALUATION,
TRACKING, FLIGHT TESTING, AIR SPACE, FLIGHT MANEUVERS, VISUAL FLIGHT
RULES, METEOROLOGY, RADAR TRACKING, SKEWNESS, STANDARD
DEVIATION
ID (25) Visual meteorological conditions, Curved approach, S-76A Aircraft,
Right turns, Kurtosis
AB (27) Flight tests using left turns to final were conducted in 1989 and 1990
at the Federal Aviation Administration (FAA) Technical Center to aid in
answering questions concerning curved approaches to a heliport under
visual meteorological conditions (VMC). Those questions included
protected airspace within the curved segment, the most feasible angle
of turn, and minimum final approach segment. Additional tests using the
FAA's Sikorsky S-76, were conducted at the FAA Technical Center in 1992
using right turn to final. Results will be used to help refine the
airspace requirements for curved approaches. Three turn angles were
examined, 45, 90 and 180 degrees each with three different final
segment lengths, 800, 1200 and 1600 feet. A groundbased tracking system
was used to track all maneuvers. This report documents the results of
these flights. The test procedures, evaluation methodology, and
technical and operational issues are discussed. Analysis of pilot
performance, as well as pilot subjective input, are provided.
Conclusions are drawn that address the airspace, turn angle, and final
segment issues. The results will be considered in future modifications
to the FAA Heliport Design Advisory Circular, AC 150/5390-2. Curved
approaches, Approach surface, Final segment, Heliport.

AN (1) AD-A281 733/XAG

FG (2) 010600
050100
050300
130800
010100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) The Federal Aviation Administration Plan for Research, Engineering and
Development, 1994.
RD (11) May 1994
PG (12) 178 Pages
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *CIVIL AVIATION, *COMMERCIAL AVIATION, *SYSTEMS MANAGEMENT,
*SYSTEMS
APPROACH
COST EFFECTIVENESS, INDUSTRIAL RESEARCH, MANAGEMENT ENGINEERING,
AERONAUTICAL ENGINEERING, RESEARCH MANAGEMENT
ID (25) FAA(Federal Aviation Administration), NAS(National Airspace System),
Aviation industry, Research and development
AB (27) The last few years have clearly demonstrated the rapid changes and
growing challenges that the aviation industry and the Federal Aviation
Administration (FAA) must face. To meet these challenges, the FAA
cannot proceed with a 'business as usual' attitude. We must develop
innovative, cost-effective solutions to problems in the National
Airspace System (NAS) that meet the aviation industry's needs in a
timely manner. Also, we must take a total system approach when
developing new systems so that we do not create a new problem in our
attempt to solve an existing one. The 1994 FAA Plan for Research,
Engineering and Development (R,E&D) describes the FAA's efforts to
develop technologies that address both current and projected NAS issues
so that our Nation can maintain a competitive, robust aviation
infrastructure. Just as new systems must be integrated to achieve a
total systems approach, the R,E&D Plan must be integrated with other
FAA plans to create a system development and implementation pipeline.
Also, the R,E&D plan must be as dynamic as the aviation industry so
that the FAA can respond in a timely manner to new requirements from
its 'customers' in every segment of the aviation community.

AN (1) AD-A283 310/XAG
FG (2) 170703
250200
230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Controller Evaluation of Initial Data Link En Route Air Traffic Control Services: ISSS Design Development. Study 1.

DN (9) Final rept.

RD (11) May 1994

PG (12) 153 Pages

RS (14) DOT/FAA/CT-94/25

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DATA LINKS, *MAN COMPUTER INTERFACE, *DIGITAL COMMUNICATIONS AIR TRAFFIC CONTROLLERS, AIRBORNE, COLLISION AVOIDANCE, COLLISIONS, MANAGEMENT, CONGESTION, REDUCTION, COMMUNICATION AND RADIO SYSTEMS,

VOICE COMMUNICATIONS, GROUND BASED, INFORMATION TRANSFER

ID (25) ISSS(Initial Sector Suite System), National airspace system, AAS(Advanced Automation System)

AB (27) This report documents the first Federal Aviation Administration (FAA) design development study of an initial group of en route air traffic control (ATC) services designed for transmission by Data Link technologies using the Initial Sector Suite System (ISSS) as an air traffic controller interface. The research was conducted by the FAA Technical Center, Airborne Collision Avoidance and Data Systems Branch, ACD-320. Data link, En Route, Initial sector suite system

AN (1) AD-A279 137/XAG

FG (2) 061100
070200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Toxicity of Carbon Monoxide-Hydrogen Cyanide Gas Mixtures: Expose Concentration, Time-to-Incapacitation, Carboxyhemoglobin, and Blood Cyanide Parameters.

DN (9) Final rept.

AU (10) Sanders, Donald C.

Chaturvedi, Arvind K.

Endecott, Boyd R.

Ritter, Roxane M.

Vu, Ngocoan

RD (11) Apr 1994

PG (12) 14 Pages

RS (14) DOT/FAA/AM-94/7

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *BLOOD, *CARBON MONOXIDE, *CYANIDES, *TOXICOLOGY ACCIDENTS, ADDITIVES, AIRCRAFT, COMBUSTION, DEATH, ENVIRONMENTS, HYDROGEN, HYDROGEN CYANIDE, INCAPACITATION, INHALATION, LABORATORIES, MIXTURES, MONOXIDES, PARAMETERS, RATS, TIME, EXPOSURE(GENERAL), GASES

AB (27) During aircraft interior fires, carbon monoxide (CO) and hydrogen cyanide (HCN) are produced in sufficient amounts to cause incapacitation and death. Time-to-incapacitation (ti) is a practical parameter for estimating escape time in fire environments. Exposures to CO-HCN mixtures have demonstrated that these gases have additive effects (producing shorter times to incapacitation), but the resulting concentrations of carboxyhemoglobin (COHb) and blood cyanide (CN-) at incapacitation are not well defined. These undefined relationships between COHb and blood CN- levels and the onset of incapacitation make the interpretation of postmortem levels difficult for medical accident investigators. To explore these relationships, ti was determined in laboratory rats exposed to 2 CO-HCN mixtures consisting of CO and HCN concentrations that produce 5- and 35-min ti in individual gas exposures; COHb and blood CN- concentrations were determined at incapacitation. In the high concentration CO-HCN mixture, the resultant ti was shortened from 5 min to 2.6 min; COHb dropped from 81% to 55% and CN- from 2.3 microns/mL to 1.1 microns/mL. At the lower concentration COHCN mixture, where the resultant ti was reduced from 35 min to 11.1 min, COHb dropped from 71% to 61% and blood CN- decreased from 4.2 microns/mL to 1.1 microns/mL. Comparison of the COHb and blood CN- values with the values from our signal gas exposure studies indicated that any alteration of the uptake of either gas in blood by the presence of the other was minimal. These findings suggest that changes in COHb and blood CN- may not be directly correlated with the onset of incapacitation and that postmortem blood levels should be carefully evaluated, particularly when both gases are present in fire victims.

AN (1) AD-A279 229/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Scanning and Monitoring Performance: Effects of the Reinforcement Values of the Events Being Monitored.

DN (9) Final rept.
AU (10) Rasmussen, P. G.
 Revzin, A. M.
RD (11) Apr 1994
PG (12) 10 Pages
RS (14) DOT/FAA/AM-94/8
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *MONITORING, *SCANNING
 ATTENTION, BENEFITS, CONTROL, COSTS, ERRORS, FREQUENCY, JOBS,
 LABORATORIES, PENALTIES, PERSONNEL SELECTION, RATES, SPECIALISTS,
TEST

AND EVALUATION, TRAINING, VALUE, VISION, WORK
AB (27) We formulated a hypothesis suggesting that operators could make scanning and monitoring errors if they tended to concentrate on a 'high-value' display sub-area while ignoring 'low-value' problems elsewhere on the display. Such 'data' would have application to Air Traffic Control Specialist (ATCS) jobs. We tested the hypothesis in an experiment rewarding good performance in a laboratory task. Subjects monitored two visual display 'work areas' with defined task difficulty. In the high-value work area, each error cost the subjects four or ten times as much as in the low-value work area. The data obtained suggest that differing task error penalties, or reinforcement values, can induce a greater than usual frequency of errors in some subjects. Rewarding good performance in two-work area tests without differing error penalties did not induce significant error rate differences, nor did such rewards significantly affect total task performance levels. This was true even in tests where such differential attention could benefit the subject's overall performance score, thereby increasing subject's performance bonus. However, about 15% of our subjects showed a marked tendency to concentrate their attention on a display sub-area having high-value events while periodically ignoring events elsewhere on the display. Such information may be useful in reducing the frequency of scanning errors by revising training protocols or personnel selection criteria. Vision, Visual displays, Monitoring, Reinforcement, Air traffic control.

AN (1) AD-A279 754/XAG
FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
 MEDICINE
TI (6) Validity of the Air Traffic Control Specialist Nonradar Screen as a

Predictor of Performance in Radar-Based Air Traffic Control Training.

DN (9) Final rept.
AU (10) Broach, Dana
 Manning, Carol A.
RD (11) Apr 1994
PG (12) 14 Pages
RS (14) DOT/FAA/AM-94/9
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROLLERS, *APTITUDE TESTS, *PERFORMANCE(HUMAN)
 AIR TRAFFIC CONTROL SYSTEMS, CORRECTIONS, SELECTION, SPECIALISTS,
TEST

AND EVALUATION, JOB TRAINING, AIRPORT RADAR SYSTEMS, VALIDATION
AB (27) Between January 1986 and March 1992, the Federal Aviation Administration's 42-day Nonradar Screen was used to identify Air Traffic Control Specialist (ATCS) candidates with the highest potential to succeed in the rigorous ATCS field training program. The central question addressed in this study was whether or not the Nonradar Screen was a valid employee selection procedure in view of the prevalence of radar in today's air traffic control system. To answer that question, we investigated the Nonradar Screen's criterion-related validity as a predictor of subsequent performance in radar-based air traffic control training. We hypothesized that the Nonradar Screen would add incremental validity over aptitude test scores in predicting performance in radar-based air traffic control (ATC) training conducted at the FAA Academy 1 to 2 years after entry into the occupation. Student aptitude test scores and Nonradar Screen final composite scores were regressed on final composite scores earned in radar-based ATC training. Results showed that Nonradar Screen composite scores had incremental validity over the written ATCS aptitude test for predicting radar-based training scores in both en route ($\Delta R(2) = .08$, $F(2,438) = 36.52$, $p < .001$) and terminal ($R(2) = .10$, $F(2,658) = 77.66$, $p < .001$) radar training without correcting for range restriction due to explicit selection on the Nonradar Screen final composite score.

AN (1) AD-A280 074/XAG
FG (2) 010200
 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AIRPORT
 PLANNING AND PROGRAMMING
TI (6) Enplanement and All Cargo Activity.

RD (11) Apr 1994
PG (12) 153 Pages
RS (14) DOT/FAA/PP-94-1
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC, *CARGO HANDLING, *AIR TRANSPORTATION
INFORMATION SYSTEMS, DATA BASES
ID (25) *Air carriers, *Enplanement

AN (1) AD-A280 119/XAG
FG (2) 170703
050600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Validity of the Air Traffic Control Specialist Nonradar Screen as a Predictor of Performance in Radar-based Air Traffic Control Training

AU (10) Broach, Dana
Manning, Carol A.

RD (11) Apr 1994
PG (12) 11 Pages
RS (14) DOT/FAA/AM-9419
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *TRAINING

SELECTION, PREDICTIONS, PERFORMANCE(HUMAN), APTITUDE TESTS, RADAR

AB (27) Between January 1986 and March 1992, the Federal Aviation Administration's 42-day Nonradar Screen was used to identify Air Traffic Control Specialist (ATCS) candidates with the highest potential to succeed in the rigorous ATCS field training program. The central question addressed in this study was whether or not the Nonradar Screen was a valid employee selection procedure in view of the prevalence of radar in today's air traffic control system. To answer that question, we investigated the Nonradar Screen's criterion-related validity as a predictor of subsequent performance in radar-based air traffic control training. We hypothesized that the Nonradar Screen would add incremental validity over aptitude test scores in predicting performance in radar-based air traffic control (ATC) training conducted at the FAA Academy 1 to 2 years after entry into the occupation. Student aptitude test scores and Nonradar Screen final composite scores were regressed on final composite scores earned in radar-based ATC training.

AN (1) AD-A277 291/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Test and Evaluation (OT&E) Operational Air Traffic Control Evaluation for the Prototype Airport Surveillance Radar Wind Shear Processor (ASR-WSP) at Albuquerque International Airport.

DN (9) Technical note

AU (10) Stretcher, Baxter
Ware, Bruce

RD (11) Mar 1994
PG (12) 39 Pages
RS (14) DOT/FAA/CT-TN94/04
RN (18) XH-XD
RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *RADAR, *SURVEILLANCE, *WIND SHEAR INTERNATIONAL AIRPORTS, MANAGEMENT, PROTOTYPES, QUALITY, QUANTITY,

QUESTIONNAIRES, RESPONSE, SEARCH RADAR, SUPERVISORS, TERMINALS, TEST

AND EVALUATION, WEATHER

AB (27) This report details the results of the Operational Test and Evaluation (OT&E) Operational test of the prototype Airport Surveillance Radar Wind Shear Processor (ASR-WSP). The ASR-WSP evaluation was conducted at the Albuquerque International Airport (ABQ) during the period August 2 to September 2, 1993. The objective of the OT&E Operational Test was to obtain Federal Aviation Administration (FAA) air traffic controller reaction to the prototype ASR-WSP weather data and display equipment. Questionnaire forms were used to obtain responses from supervisors and controllers relative to the operational suitability and effectiveness of the displays and data. This report includes the supervisors' and controllers' evaluation of the quality and quantity of the information provided by the ASR-WSP on the two displays; the Geographical Situation Display (GSD) and the Ribbon Display Terminal (RDT). Airport Surveillance Radar, Wind Shear Processor (ASR-WSP), Ribbon Display Terminal (RDT), Geographical Situation Display (GSD), Aviation Weather

AN (1) AD-A277 722/XAG
FG (2) 210500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aircraft High Bypass Fan Engine Performance.

DN (9) Technical note
AU (10) Salmon, Robert
RD (11) Mar 1994
PG (12) 24 Pages
RS (14) DOT/FAA/CT-TN92/35
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *FANS, *AIRCRAFT ENGINES
CONSUMPTION, FEET, FUEL CONSUMPTION, FUELS, GEOMETRY, INLETS,
POWER,
PRESSURE, RATIOS, STANDARDS, TAKEOFF, TEMPERATURE, THRUST,
TURBINES,
VARIABLES, WEIGHT

AB (27) The purpose of this Technical Note is to discuss the performance characteristics of high bypass fan engines. The performance of a CF6-6 type fan engine is compared to two types of modified engines based on the CF6-6 type design. The fully modified engine has an increased bypass ratio (5.8:1 to 9.0:1) and a variable fan pressure ratio. At takeoff power the modified engine produces the rated takeoff thrust of the standard CF6-6 engine with a 32 percent improvement in thrust specific fuel consumption (TSFC) and a turbine inlet temperature 460 deg F lower than the standard. At maximum continuous cruise power at 35000 feet and Mn 0.8 the improvement in TSFC would be 18.8 percent and the turbine inlet temperature would be 270 deg F lower than the standard CF6-6 engine. The advantage in performance obtained by the increased bypass ratio and variable geometry fan more than offset the increase in the engine weight that would result from these changes. Fan engine performance, Variable geometry fans, High bypass engines.

AN (1) AD-A277 808/XAG

**FG (2) 010600
050100**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
POLICY AND P LANS**

TI (6) FAA Aviation Forecasts, Fiscal Years 1994-2005.

RD (11) Mar 1994
PG (12) 194 Pages
RS (14) FAA-APR-94-1
RN (18) XH-FAA
RC (20) Unclassified report
DE (23) *CIVIL AVIATION, *ECONOMIC IMPACT

AIRPORTS, BUDGETS, COMMERCE, MANAGEMENT PLANNING AND CONTROL,
DOMESTIC,
TERMINAL FLIGHT FACILITIES, FORECASTING, AIR TRAFFIC CONTROL
SYSTEMS,
INTERNATIONAL, PASSENGERS, INDUSTRIAL MOBILIZATION, REVENUE
SHARING,
RECOVERY, STATISTICS, PROFITS, FINANCIAL MANAGEMENT,
GROWTH(GENERAL)

ID (25) FAA(Federal Aviation Administration), RPM(Revenue Passenger Miles),
Aviation industry, Industry consolidation

AB (27) This report contains the Fiscal Years 1994-2005 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the major users of the National Aviation System: air carriers, air taxi/commuters, military, and general aviation. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The slow pace of the economic recovery in United States and economic recessions in several of the major world trade areas have caused the aviation industry to experience continued slow traffic growth. However, the outlook for the 12-year forecast period is for moderate economic growth, stable real fuel prices, and modest inflation. Based on these assumptions, aviation activity for fiscal year 2005 is forecast to increase by 22.6 percent at towered airports and 24.0 percent at air route traffic control centers. The general aviation active fleet is forecast to decline by 3.8 percent during the forecast period but increased utilization (hours flown by aircraft) results in a 12.0 percent increase in general aviation hours flown during the same period. Scheduled domestic revenue passenger miles (RPMs) are forecast to increase 55 percent, scheduled international RPMS are forecast to increase by 108 percent, and regional/commuter RPMs are forecast to increase by 166 percent. Air carrier, Aviation statistics, Commuter/Air Taxi, Aviation activity forecasts, Federal aviation administration, General aviation, Military.

AN (1) AD-A278 792/XAG

**FG (2) 170703
230200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE**

TI (6) Maintaining Vigilance on a simulated ATC Monitoring Task Across Repeated Sessions.

DN (9) Final rept.

AU (10) Schroeder, David J

Touchstone, Robert M.

Stern, John A.

Stoliarov, Nikolai

Thackray, Richard I.

RD (11) Mar 1994

PG (12) 14 Pages

RS (14) DOT/FAA/AM-94/6

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *ATTENTION, *VIGILANCE AIRCRAFT, ALTITUDE, BEHAVIOR, CONFLICT, CONTROL, DECISION MAKING, DETECTION, ERRORS, FATIGUE, IDENTIFICATION, MALFUNCTIONS, MODIFICATION, MONITORING, PICTURES, SCANNING, SIMULATION, TARGETS, TIME, TRAFFIC, WORK

AB (27) Maintaining alertness to information provided visually is an important aspect of air traffic controllers' work. Improper or incomplete scanning and monitoring behavior is often referred to as one of the causal factors associated with operational errors and deviations. This study was undertaken to assess changes in vigilance/attention across 3 separate days as subjects performed on an Air Traffic Control (ATC) simulation task. Information was gathered as part of a larger study of attention and gaze control inefficiencies. Twenty paid subjects on 3 separate days monitored a simulated ATC task for 44 critical events over a 2 hour session. The complex monitoring task included the detection of: (a) altitude malfunctions; (b) aircraft conflict/ no conflicts where 2 aircraft were at the same altitude on an airway simultaneously; and (c) triangular targets representing VFR aircraft that appeared either centrally or peripherally on the screen during the course of each session. Changes in performance on the complex monitoring task associated with either time-on-task or repeated sessions were dependent on nature of the task. Performance on the component involving detection and decision-making (conflict/no conflict detection) evidenced a decrement associated with time-on-task on each of the 3 days. Improvement was evident from the first to the third day. Performance on the identification of the altitude malfunctions remained relatively immune to the effects of time-on-task or repeated sessions.

AN (1) AD-A280 076/XAG

FG (2) 170703

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CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Human Factors Guidelines for the Evaluation of Airborne Data Link

AU (10) Rehmann, Albert

RD (11) Mar 1994

PG (12) 97 Pages

RS (14) DOT/FAA/CT-TN93/34, ACD-320

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DOCUMENTS, *GOVERNMENT PROCUREMENT, *DATA LINKS, *HUMAN FACTORS

ENGINEERING

AIRBORNE, COMPUTERS, CONTRACTS, CONTROL, HUMANS, INTERFACES, NUMBERS,

PROCUREMENT, SPECIALISTS, DATA MANAGEMENT, COMPUTER PROGRAMS, TEST AND

EVALUATION

ID (25) Link up

AB (27) The purpose of this document is to provide human factors specialists and certification authorities with a consolidated set of tailored guidelines that can be employed to evaluate the designs of actual or proposed airborne Data Link systems. The guidelines deal with the human factors aspects of the pilot's interface, particularly those affecting the design of the computer software, and display/control hardware comprising such systems. The guidelines were compiled from a number of recognized sources that have been successfully employed by human factors practitioners to design and assess computer-human interfaces in recent years. Guidelines for interface software were derived primarily from those developed by Smith and Mosier (1986). Guidelines for the physical design of display/control hardware were obtained, to a large extent, from MIL-STD-1472D (1989), which is often cited in government procurement contracts. Human factors guidelines, Airborne data link, Human factors evaluation, Computer human interface.

AN (1) AD-A280 100/XAG

FG (2) 090500

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CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) An Evaluation of Automatic Terminal Information Service (ATIS) Flight Deck Display Presentation Options.

DN (9) Technical note for period ending Dec 92

AU (10) Rehmann, Albert

RD (11) Mar 1994

PG (12) 62 Pages

RS (14) DOT/FAA/CT-TN93/25

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DATA LINKS, *DISPLAY SYSTEMS, *INFORMATION TRANSFER, *HUMAN FACTORS

ENGINEERING

AUTOMATIC, AUTOMATION, AVIONICS, FLIGHT DECKS, FORMATS, MANAGEMENT, MECHANIZATION, MISSIONS, STANDARDS, COMMUNICATION TERMINALS, PILOTS,

DESIGN CRITERIA, INTERACTIVE GRAPHICS, CASE STUDIES

ID (25) *ATIS(Automatic Terminal Information Service), ACARS(Aircraft Communications Addressing and Reporting System), IDU(Interactive Display Unit)

AB (27) This document describes the first of three studies relating to human factors aspects in the flight deck display of Automatic Terminal Information Service (ATIS). This research is being conducted by the Federal Aviation Administration (FAA) Technical Center. The first part-task study examined basic format design variables. Its purpose was to begin addressing flight deck design issues pertinent to the design of the tower ATIS workstation and, collect data relevant to standard and certification groups within the FAA. Future studies in an FAA Technical Center high-fidelity mock-up and various aircraft simulators will examine full mission issues, such as procedures, equipment mechanization, and automation. Avionics data link human factors, Automatic Terminal Information Service (ATIS), Aircraft Communications Addressing and Reporting System (ACARS).

AN (1) AD-B198 228/XAG

FG (2) 190100

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CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Elemental Composition of Explosives.

DN (9) Final rept.

AU (10) Krauss, Ronald A.

RD (11) Mar 1994

PG (12) 46 Pages

RS (14) DOT/FAA/CT-94/20

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: Further dissemination only as directed by US Dept. of Transportation, FAA, Office of Civil Aviation Security, 800 Independence Ave, SW, Washington, DC 20591, Apr 95 or Non-DoD authority.

DE (23) *EXPLOSIVES, *CHEMICAL COMPOSITION, *CHEMICAL ELEMENTS DENSITY, DETECTION, AIRCRAFT, MATERIALS, SECURITY, VULNERABILITY, TARGETS, NITROGEN, AERONAUTICS, RELIABILITY, CIVIL AVIATION, ATOMIC PROPERTIES, IONIZING RADIATION, CHEMICAL COMPOUNDS, BAGS

DL (33) 15

AN (1) AD-A276 706/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation for the Development of Taxiway Lighting Intensity Standards.

DN (9) Technical note.

AU (10) Bagot, Keith W.

RD (11) Feb 1994

PG (12) 15 Pages

RS (14) DOT/FAA/CT-TN93/50

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TAXIWAYS, *VISIBILITY, *TEST AND EVALUATION AIR TRAFFIC CONTROLLERS, CONTROL, INTENSITY, STANDARDS, SUNRISE, SUNSET, TRAFFIC, AIRCRAFT, LANDING FIELDS, RUNWAYS, AVIATION SAFETY

ID (25) Intensity steps

AB (27) The purpose of this evaluation was to gather data to produce taxiway lighting intensity standards to be incorporated into DOT/FAA Order 7110.65H, Air Traffic Control. Currently, there are no tables of standard intensity settings for taxiway lighting systems. Air traffic controllers are only instructed to operate the taxiway lights between sunset and sunrise and at other times they consider it necessary. Taxiway lighting, Intensity steps, Visibility

AN (1) AD-A277 047/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Perceptions of Organizational Support and Affectivity as Predictors of Job Satisfaction.

DN (9) Final rept.

AU (10) Witt, L. A.

RD (11) Feb 1994

PG (12) 14 Pages

RS (14) DOT/FAA/AM-94/2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *JOB SATISFACTION, *ORGANIZATIONS

AIR TRAFFIC, URBAN AREAS, CLIMATE, CONTROL, FUNCTIONS, HYPOTHESES, ILLINOIS, JOBS, OKLAHOMA, PERCEPTION, RESPONSE, SCALE, SCHOOLS, SPECIALISTS, SURVEYS, INSTRUCTORS, TRAFFIC, TRAINEES, VARIABLES,

WORK,

EMPLOYMENT

AB (27) Staw, Bell, and Clausen (1986) have suggested that employees bring a positive or negative disposition to the work setting, process information about the job in a way that is consistent with that disposition, and then experience job satisfaction or dissatisfaction as a result. Although this is not a universally held viewpoint, given such endeavors as the FAA Job Satisfaction Survey and managerial efforts to improve overall job satisfaction, the issue of employee disposition is important. Agency attempts to alter the work situation for the purposes of increasing job satisfaction could have limited potential for success to the extent that job satisfaction is a function of disposition. The present study tested several hypotheses examining both the main and interactive effects on job satisfaction of variables assessing the person (disposition) and situation (organizational climate) across several organizations. Disposition in this study refers to employee descriptions of how they generally feel in response the PANAS Affectivity scale developed by Watson and Clark. The PANAS is comprised of 20 adjectives that describe both positive (PA) and negative (NA) affect. Data were accumulated by meta-analysis from 1,491 employees in 35 different organizational systems. This included survey data from employees at the FAA Aeronautical Center (N=1,029) in Oklahoma City, Air Traffic Control Specialist trainees from the FAA Academy Nonradar Screen Program (N= 397) in Oklahoma City, and teachers from a rural public school system (N=65) in Illinois. Employees in each of those groups were participants in larger surveys of job satisfaction and other attitudinal factors that influence job satisfaction.

Organizational support, Organizational affectivity, Job satisfaction.

AN (1) AD-A277 449/XAG

FG (2) 230200

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Human Factors in Airway Facilities Maintenance: Development of a Prototype Outage Assessment Inventory.

DN (9) Final rept.

AU (10) Blanchard, Robert E.

Vardaman, Jennifer J.

RD (11) Feb 1994

PG (12) 26 Pages

RS (14) DOT/FAA/AM-94/5

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DATA BASES, *FACILITIES, *INVENTORY, *HUMAN FACTORS ENGINEERING BUILDINGS, COLLECTION, COMMUNITIES, DOWNTIME, FAILURE, FORMATS, HUMANS,

MAINTENANCE, MAPS, OKLAHOMA, SECONDARY, STRUCTURES, TEST AND EVALUATION, TIME, TOOLS, URBAN AREAS, VALUE

ID (25) Airway facilities

AB (27) The airway facilities (AF) maintenance community is concerned with identifying ways of reducing both the incidence of equipment failure and the amount of time required to restore equipment to operational status following a failure. It is vitally important to identify the many components of downtime and contributors to a particular outage (equipment failure). Thus, the primary objective of this study was to develop a technique or tool with which to identify and map within a 'systems' structure all potentially-significant contributors to AF maintenance downtime. The technique was designed to facilitate (a) the collection of maintenance-related data during an actual outage; (b) the entry of this data into a data base; and (c) the analysis of the data base in order to identify causal relationships. The secondary objective was to be able to make use of past outage data as a means for building the data base by determining whether overall outage time values can be apportioned among the contributors to downtime using subject matter experts (SMEs) who were intimately involved in restoring a given outage. SMEs from the Oklahoma City (OKC) General National Airspace System (GNAS) Airway Facilities Sector (AFS) and the Memphis GNAS AFS assisted in the iterative design and review process that produced the

Airway Facilities Outage Assessment Inventor Form A (AFOAI). Ten previous OKC GNAS outages and four previous Memphis GNAS outages were analyzed using the AFOAI - For A, thus confirming that the inventory is a useful tool in identifying specific contributors to AF maintenance downtime. *Airway Facilities *Data bases, Corrective maintenance *Human factors *Quantification, Maintenance reporting

AN (1) AD-A277 534/XAG

FG (2) 010307

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Civil Tiltrotor Market Penetration Effects on Northeast Corridor Airport Delay.

DN (9) Technical note

AU (10) Cheung, Anny S.
Bart, Douglas

RD (11) Feb 1994

PG (12) 38 Pages

RS (14) DOT/FAA/CT-TN94/1, FAA-AOR-100-94-001

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TILT ROTOR AIRCRAFT

AIRCRAFT, AIRPORTS, BENEFITS, COSTS, DELAY, FLIGHT, IMPACT, OPERATION,

REMOVAL, SAVINGS, SCENARIOS, SIMULATION, PENETRATION

AB (27) This report addresses the delay impacts resulting from replacing conventional aircraft services with civil tiltrotor (CTR) operations in the Northeast corridor at four CTR service levels. This analysis was conducted by using the National Airspace System Performance Analysis Capability (NASPAC) Simulation Modeling System (SMS). Cost of delay savings were derived by using the cost of delay module. The result of this study will be used by the Vertical Flight Program Office (ARD-30) in assessing the benefits of the CTR operations in the Northeast corridor. Civil Tiltrotor (CTR), Corridor airports, Feeder airports, Full Removal Scenario (FRS), Partial Removal Scenarios (PRS)

AN (1) AD-A277 549/XAG

FG (2) 170703

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Validation of the Federal Aviation Administration Air Traffic Control Specialist Pre-Training Screen.

DN (9) Final rept.

AU (10) Broach, Dana
Brech-Clark, Jan

RD (11) Feb 1994

PG (12) 16 Pages

RS (14) DOT/FAA/AM-94/4

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *COMPUTERS, *CONTROL, *TRAFFIC, *AIR TRAFFIC CONTROLLERS, *DATA BASES

AIR, AIR TRAFFIC, APTITUDE TESTS, APTITUDES, COGNITION, DYNAMICS, EMPLOYMENT, HUMANS, INFORMATION PROCESSING, JOB ANALYSIS, JOBS, MANAGEMENT, MANPOWER, PROCESSING, RADAR, REASONING,

REQUIREMENTS,

SELECTION, SPECIALISTS, STUDENTS, TEST AND EVALUATION, TRAINING, VALIDATION, WORK, WORKLOAD, PERSONNEL MANAGEMENT

AB (27) Two formal validation studies of the Air Traffic Control Specialist Pre-Training Screen (ATCS/PTS), a 5-day computer-administered test battery, are described. The ATCS/PTS was designed to replace the 9-week U.S. Federal Aviation Administration (FAA) Academy ATCS Nonradar Screen program that served as the second major test in the ATCS selection system. Review of ATCS job analyses suggested that predictor tests should assess cognitive constructs such as spatial reasoning and short-term memory, and require dynamic, concurrent performance. A proposed test battery was developed, consisting of 2 computer-administered information processing tests and a simplified radar-based air traffic control work sample. In study 1, predictive, criterion-related validation (N = 438) found that the proposed test battery explained additional variability in scores earned in the 9-week FAA Academy program, after taking into account student aptitude. In study 2, criterion-related validation (N = 297) demonstrated that the proposed test battery was as valid as the 9-week FAA Academy ATCS Nonradar Screen for predicting progress in field training. Preliminary data from a third study conducted after validation of the ATCS/PTS seem to suggest that the abilities assessed by the new computerized tests reflect the abilities required on the job. However, implementation of the ATCS/PTS for actual employment decision-making in June 1992 was based on results obtained in the second concurrent, criterion-related validation study. Additional research requirements as part of an aviation human factors research program are described. Air Traffic Control Specialist, Selection, Validation, Tests, Ability, Job

Analysis, Computer-administered Test

AN (1) AD-A277 569/XAG

FG (2) 170703

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CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) National Airspace System Exploratory Assessment for Year 2005.

DN (9) Technical note, Jul-Sep 93

AU (10) Baart, Douglas

RD (11) Feb 1994

PG (12) 29 Pages

RS (14) DOT/FAA/CT-TN94/5, FAA-AOR-100-93-018

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIRPORTS, *CONGESTION, *SPACE(ROOM)

INSTRUMENT FLIGHT, APPROACH, CAPACITY(QUANTITY)

ID (25) NAS(National Airspace System), NASPAC(National Airspace System Performance Analysis Capability)

AB (27) This report documents the exploratory assessment of the National Airspace System (NAS) for the year 2005. The National Airspace System Performance Analysis Capability (NASPAC) Simulation Modeling System (SMS) was used to simulate the future air traffic control (ATC) system. Airport improvements expected to be completed by the year 2005 were based on the National Plan of Integrated Airport Systems (NPIAS) and future air traffic demand was based on the 1991 Terminal Area Forecast (TAF). Results of the analysis showed an increase in system-wide delay of 4.3 minutes-per-aircraft over 1990 levels, resulting in 13.2 billion 1992 dollars in total delay cost for the year 2005. The analysis showed that airfield capacity limitations are the major cause of delay that is projected for the future ATC system. Airports which we anticipate to have the largest increase in delay over current levels are located in Southern California and southern Florida. The results suggest that more emphasis should be placed on acquisition investments that alleviate airfield congestion.

AN (1) AD-A279 034/XAG

FG (2) 010200

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Safe Heliports Through Design and Planning. A Summary of FAA Research and Development.

DN (9) Final rept.

AU (10) Smith, Robert D.

RD (11) Feb 1994

PG (12) 122 Pages

RS (14) DOT/FAA/RD-93/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRPORTS, *VERTICAL TAKEOFF AIRCRAFT, *HELICOPTERS, *HELIPADS, *HELIPORTS, *TILT WING AIRCRAFT

AIRCRAFT, FLIGHT, TILT ROTOR AIRCRAFT, LANDING, MANAGEMENT, MAPS, MATERIALS, PLANNING, ROADS, SITES, REPORTS, AVIATION SAFETY,

PLANNING

ID (25) Landing sites, Vertical flight, FAA(Federal Aviation Administration), DOT/FAA/RD-93/17

AB (27) During the last decade, the Federal Aviation Administration (FAA) has published several dozen research and development (R&D) reports dealing with the planning and design of landing sites for vertical flight aircraft. These landing sites include helipads at airports, heliports, helistops, vertiports, and unimproved sites. Vertical flight aircraft include helicopters, tiltrotor, and tiltwing. These reports would make a stack that is several feet high. Airport, heliport, and vertiport planners and designers should be familiar with FAA R&D efforts in this area. We recognize, however, that many people do not have the time to read all of the published material. In addition, without a road map through all of this material, it may be difficult to see how multiple documents fit together to tell a coherent story on a particular subject of interest. With this in mind, the FAA has prepared this summary to assist you in becoming familiar with the results of these efforts. Airport, Helicopter, Heliport, Landing Site, Rotorcraft, Tiltrotor, Vertical flight.

AN (1) AD-A279 037/XAG

FG (2) 010200

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Federal Aviation Administration Plan for Research, Engineering and
Development 1993.

RD (11) Feb 1994

PG (12) 198 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *AIRCRAFT INDUSTRY, *AIRPORTS, *AIR TRAFFIC,
*AIR

TRAFFIC CONTROL TERMINAL AREAS, *AVIATION SAFETY, *HUMAN FACTORS
ENGINEERING, *AIR NAVIGATION

AIR SPACE, ECONOMIC IMPACT, AREA SECURITY, WEATHER, AEROSPACE
CRAFT,

RUNWAYS, CRASHWORTHINESS, ENVIRONMENTAL IMPACT, AUTOMATION,
SURVEILLANCE, SATELLITE COMMUNICATIONS, AIRCRAFT MAINTENANCE,
EXPLOSIVES, DETECTION, TECHNOLOGY TRANSFER

ID (25) Research and development, National airspace system, Structural
integrity

AB (27) The Federal Aviation Administration (FAA) manages and operates the
National Airspace System (NAS), a significant national resource.

However, the demands on this system are continuously growing, and
changing technologies provide the opportunity to dramatically improve
system effectiveness and efficiency. To this end, the FAA's R,E&D
Program is an investment in the future that will sustain the United
States preeminence in aviation throughout the world. Without this
investment, the United States leadership would erode. Thus, the
importance of aviation to the Nation Mandates a comprehensive research,
engineering, and development program to ensure both the safety of
public air transportation and the fulfillment national priorities and
policy goals. The contributions of aviation to the Nation's economy
cannot be overstated. Aviation and related industries contribute over
\$600 billion to the United States economy (5.5 percent gross domestic
product (GDP), encompassing over 8 million jobs. Aviation is critical
to business travel, tourism, and travel services (a \$47.5 billion
industry), as well as aircraft components (\$24.7 billion), cargo and
mail transport, and industrial national and international
competitiveness. Aerospace is by far the largest exporting industry for
the United States, with a 1990 industry trade surplus of \$27 billion.
The United States is currently the recognized world leader in
aerospace, aviation, and air traffic control, However, this leadership
role cannot be sustained without continued research into new and

evolving technologies

AN (1) AD-A279 163/XAG

FG (2) 130500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Stress-Intensity Factor Solutions for Cracks at Countersunk Rivet Holes
Under Uniaxial Tension.

DN (9) Final rept.

AU (10) Tan, P. W.

Bigelow, C. A.

O'Donoghue, P. E.

Atluri, S. N.

RD (11) Feb 1994

PG (12) 30 Pages

RS (14) DOT/FAA/CT-93/68

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RIVETED JOINTS, *CRACK PROPAGATION, *STRESS ANALYSIS
COMPUTATIONS, CRACKS, DAMAGE, INTENSITY, PLATES, RIVETS, SHAPE,
SURFACES, TENSION, FRACTURE(MECHANICS), STRENGTH(MECHANICS),
FATIGUE(MECHANICS), FINITE ELEMENT ANALYSIS, HOLES(OPENINGS)

ID (25) Countersunk holes

AB (27) To predict crack growth and fracture strengths of riveted joints
subjected to widespread fatigue damage, accurate stress and fracture
analyses of corner and surface cracks at a rivet hole are needed. The
results presented in this report focus on the computation of
stress-intensity factor solutions for rivet holes with cracks. The
stress-intensity factor solutions for surface and corner cracks at
countersunk rivet holes in a plate were obtained using the
finite-element-alternating technique. A range of crack shapes, crack
sizes, and crack locations under remote tension were considered.

AN (1) AD-A306 593/XAG

FG (2) 010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) General Aviation Preflight Planning to Reduce Accidents

AU (10) Smith, Robert D.

RD (11) Feb 1994

PG (12) 83 Pages

RS (14) DOT/FAA/SP-94/1-LR

RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AVIATION ACCIDENTS, *AVIATION SAFETY, *GENERAL AVIATION AIRCRAFT
COMMERCE, DECISION MAKING, FLIGHT TRAINING, PILOTS, VENDORS,
ACCIDENTS
ID (25) *PREFLIGHT PREPARATION PIC, GENERAL AVIATION, DUAT, ACCIDENT
PREVENTION

AB (27) Accident analysis reveals that preflight planning is often inadequate or entirely ignored. This report addresses the question, 'How can the FAA empower the General Aviation (GA) community to minimize the number of accidents resulting from inadequate preflight planning and preparation?' In answering this question, a key issue is how best to provide the preflight services needed by GA and how best to encourage a greater percentage of pilots to do adequate preflight preparation. There have been major changes in the preflight/weather briefing market over the last decade. There is a need for a fundamental reexamination of the preflight/weather briefing market and of the roles and responsibilities of the various players: federal, state, commercial vendors, and pilots. Such a reexamination would provide the FAA with a better understanding of the consequence of agency decisions. Thus, it would allow the FAA to take these consequences into account in the agency decision making process.

AN (1) AD-A275 800/XAG
FG (2) 250200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) 1.8 Gigahertz (GHz) Digital Low Density Radio Communications Link
(LDRCL) Operational Test and Evaluation (OT&E) Integration and OT&E
Operational Final Test Report.
DN (9) Technical note
AU (10) Melillo, Michael R.
RD (11) Jan 1994
PG (12) 35 Pages
RS (14) DOT/FAA/CT-TN93/41
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *RADIO EQUIPMENT, *COMMUNICATION EQUIPMENT
DENSITY, DEPLOYMENT, FLORIDA, INTEGRATION, LOW DENSITY, MISSIONS,
OFF
THE SHELF EQUIPMENT, SITES, SPECIFICATIONS, TEST AND EVALUATION,
DATA
LINKS

AB (27) This report contains the results of the Operational Test and Evaluation (OT&E) Integration and OT&E Operational Testing of the Commercial-Off-The-Shelf (COTS) Low Density Radio Communications Link's (LDRCL) 1.8-gigahertz (GHz) digital radio system. The OT&E testing was accomplished by first testing the LDRCL equipment against its equipment specification (FAA-E-2853), and then performing OT&E testing at the key site (Miami, Florida). These tests proved that the 1.8 GHz LDRCL equipment can fulfill its mission in the National Airspace System (NAS) and that it is suitable and effective. Based on the test results, it is concluded that the 1.8 GHz LDRCL equipment is qualified for operational deployment. Low Density Radio Communications Link (LDRCL), 1.8-GHz digital radio system.

AN (1) AD-A275 913/XAG

FG (2) 060500

050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Index of FAA Office of Aviation Medicine Reports: 1961 through 1993.

AU (10) Collins, William E.

Wayda, Michael E.

RD (11) Jan 1994

PG (12) 75 Pages

RS (14) DOT/FAA/AM-94/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION MEDICINE, *INDEXES

MEDICINE, RESEARCH FACILITIES, REPORTS, RESEARCH MANAGEMENT

ID (25) Office of Aviation Medicine reports, Civil Aeromedical Research
Institute reports, Research reports

AB (27) An index to FAA Office of Aviation Medicine Reports (1964-1993) and Civil Aeromedical Institute Reports is presented as for those engaged in aviation medicine and related activities. The index lists all FAA aviation medicine reports published from 1961 through 1993: chronologically (pp. 1-37), alphabetically by author (pp. 39-46) and alphabetically by subject (pp. 47-68). Aviation medicine, Research reports, Office of aviation medicine.

AN (1) AD-A294 265/XAG

FG (2) 010600

050100

050400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Federal Aviation Administration Annual Report 94.

DN (9) Annual rept.

RD (11) 1994

PG (12) 103 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMMERCE, *AIR TRAFFIC CONTROL SYSTEMS, *CIVIL AVIATION,
*REGULATIONS

AVIONICS, GLOBAL, UNITED STATES, AIRCRAFT, RISK, ACQUISITION, AIR,
GROWTH(GENERAL), PILOTS, SECURITY, RATES, POPULATION, COSTS,
HELICOPTERS, SAFETY, AIRFRAMES, TRAVEL, SYSTEMS ANALYSIS, AIRPORTS,

AIR

TRANSPORTATION, PASSENGERS

AB (27) The Federal Aviation Administration (FAA) was created in 1958 to promote the safety of civil aviation and to foster air commerce. More than 48,000 career professionals are employed in the principal activities which support this mission: air traffic services; systems research and acquisition; regulation and certification; airport infrastructure development; civil aviation security; and agency administration. In the past three decades, progressive and substantial improvements in Air Traffic Control (ATC) technology, training, airframes, engines, avionics, cabin interiors, and airport security have greatly reduced the risk of air travel. Today, passengers can travel by air more safely, and for less cost, than ever before. And they are doing so in record numbers. In WY 1994, air travel on U.S. air carriers, regional and commuters increased from 513 million passengers to 555 million-- up 8.2 percent from the previous year and more than double the rate of growth which had been forecast. Along with expanding roughly (30 percent of the world's commercial air passengers, the United States also has the world's largest and most active population of general aviation pilots. Aircraft in this category range from the homebuilt, one-seat single engine piston airplanes to the most sophisticated long-range corporate jets and helicopters.

AN (1) AD-A296 813/XAG

FG (2) 010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL
AVIATION

SECURITY

TI (6) Criminal Acts Against Civil Aviation.

RD (11) 1994

PG (12) 101 Pages

RN (18) XH-DOT/FAA/ACS

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *CRIMINAL INVESTIGATIONS

SOURCES, UNITED STATES, AIRCRAFT, FOREIGN, THREATS, GRAPHS,
SECURITY,

ATTACK, ACCURACY, AERONAUTICS, CASE STUDIES, SURVEYS, SYMBOLS,
RECORDS,

DOMESTIC, AVIATION SAFETY, AIR TRANSPORTATION, BOMBING, AIRCRAFT
HIJACKING

AB (27) Criminal Acts Against Civil Aviation Since 1986, the Federal Aviation Administration's Office of Civil Aviation Security has been publishing an annual report entitled Criminal Acts Against Civil Aviation. This report is a compilation of criminal incidents against civil aviation aircraft and interests worldwide. As in last year's publication, the 1994 issue contains feature articles and geographic overviews. Incidents are summarized in the overviews, and the feature articles focus on specific aviation-related issues or case histories. There is also a section in which incidents are compared for the 5-year period, 1990 to 1994. Charts, graphs, and maps appear throughout the publication. New to this year's edition is a Product Survey, which appears on the last page of the booklet. This questionnaire can be separated and returned. The information contained in this publication is derived from a variety of foreign and domestic sources. In many cases, however, specific details of a particular incident, especially those occurring outside the United States, may not be available. While the FAA makes every effort to provide complete and accurate information, it is not always possible to verify accounts of some incidents. The FAA maintains records of aircraft hijackings, bombing attacks, and other significant criminal acts against civil and general aviation interests worldwide, which are used to compile this report. Offenses such as these represent serious threats to aviation safety and, in those incidents involving U.S. air carriers or facilities outside the United States, are often intended as symbolic attacks against the United States.

AN (1) AD-A296 958/XAG

FG (2) 050900

120300

150100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

POLICY AND P LANS

TI (6) U.S. Civil Airmen Statistics, Calendar Year 1994.

DN (9) Annual rept.

RD (11) 1994

PG (12) 145 Pages

RS (14) FAA-APO-95-7

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PILOTS, *STATISTICS, *CIVIL AVIATION

COUNTING METHODS, COMMERCIAL AVIATION, HELICOPTERS, FLIGHT,
INSTRUMENTATION, RATINGS, INSTRUCTORS, AIR TRANSPORTATION,
AVIATION

PERSONNEL, GLIDERS

AB (27) This report contains calendar year statistics on pilots and nonpilots and the number of certificates issued. It also contains counts of pilots and nonpilots by state and county. Certificates held, nonpilot, private, commercial, student, airline transport, glider, helicopter, lighter than-air, instrument rating, flight instructors, pilot certificates issued.

AN (1) AD-A310 183/XAG

FG (2) 010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airport Activity Statistics of Certificated Route Air Carriers, 1994.

DN (9) Rept. for period ending 31 Dec 94

RD (11) 1994

PG (12) 1320 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *STATISTICAL DATA, *AIRPORTS, *AIR TRANSPORTATION

VOLUME, PAYLOAD, COMMERCIAL AIRCRAFT, TRAFFIC, CAPACITY(QUANTITY),
STATISTICS, CARGO, DATA ACQUISITION, INTERNATIONAL, DOMESTIC, POSTAL
SERVICE, SEATS, REVENUE SHARING

AB (27) Beginning with the publication ending calendar year 1993, all scheduled and nonscheduled service traffic statistics performed by large certificated U. S. air carriers are presented. Prior to that year, only scheduled and some nonscheduled emplanements for scheduled air carriers were included; no emplanements were included for nonscheduled service air carriers (charter service only). There were also changes in this publication due to the T-100 data collection system for U.S. air carriers which began January 1, 1990. The format was changed to comply with 14 CFR 241.19.6 that the restrict public disclosure of T-100

detail and summary international data. Non U.S. airport data does not appear. Data are no longer broken out by domestic or international operations at airports, only system operations are shown. This edition presents the volume of revenue passenger, freight, and mail traffic handled by the nation's large certificated air carriers at each airport served during the 12 months ending December 31, 1994. In addition, a presentation of aircraft departures is shown including detail by aircraft type for total departures performed in scheduled, nonscheduled, and all services. Large certificated air carriers hold Certificates of Public Convenience and Necessity issued by the Department of Transportation (DOT) authorizing the performance of air transportation. Large certificated air carriers operate aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds. Data for commuter, intra-state, and foreign-flag air carriers are not included in this publication.

AN (1) AD-A310 260/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) FAA Air Traffic Activity. Fiscal Year 1994.

DN (9) Statistical rept. 1 Oct 93-30 Sep 94

AU (10) Trembley, Nancy

RD (11) 1994

PG (12) 328 Pages

RS (14) FAA-APO-95-11

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *TERMINAL FLIGHT FACILITIES
STATIONS, AIRCRAFT, AIRPORT CONTROL TOWERS, CONTROL CENTERS,
INSTRUMENTATION, INSTRUMENT LANDINGS, APPROACH

AB (27) This FAA publication furnishes terminal and en route air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations, Approach Control Facilities, and FAA- contracted ATCTs. These reports are used as a guide in determining the need for larger or additional facilities, upgraded equipment at particular facilities, and possible increases in personnel at existing facilities.

23

AN (1) AD-A321 764/XAG
FG (2) 010300
050200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
POLICY AND PLANS
TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1994.
DN (9) Annual rept.
RD (11) 1994
PG (12) 140 Pages
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AVIATION ACCIDENTS, *CIVIL AVIATION, *HANDBOOKS, *AIRPORTS
AIRCRAFT, EXPORTS, PRODUCTION, STATISTICAL DATA, AERONAUTICS, AIR FORCE
PERSONNEL, AIR TRANSPORTATION, DICTIONARIES, GENERAL AVIATION
AIRCRAFT,
IMPORTS
AB (27) This report present statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production and Imports/Exports, and a Glossary of the terms used in this publication.

AN (1) AD-A274 100/XAG
FG (2) 010400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Digital Altimeter Setting Indicator (DASI) Operational Test and Evaluation (OT&E) Operational Test Procedures.
DN (9) Technical note
AU (10) Greco, Michael
Biagi, Paul
Hoover, Eric
RD (11) Dec 1993
PG (12) 35 Pages
RS (14) DOT/FAA/CT-TN93/44
RN (18) XH-XD
RC (20) Unclassified report

DE (23) *ALTIMETERS, *INDICATORS
AIR, AIR TRAFFIC, AIR TRAFFIC CONTROLLERS, AIRCRAFT, ALTITUDE, ATMOSPHERICS, BAROMETRIC PRESSURE, CONTROL, ELEVATION, FORMATS, GEOPOTENTIAL, MEAN, MERCURY, OCEANS, PANELS, PILOTS, POLICIES, PRESSURE, REQUIREMENTS, SEA LEVEL, SPECIFICATIONS, STANDARDS, STATIONS,
TEST AND EVALUATION, TRAFFIC, TRANSLATORS, UNITED STATES, VALUE, OPERATIONAL EFFECTIVENESS, DISPLAY SYSTEMS
AB (27) The Digital Altimeter Setting Indicator (DASI) is a system which measures the atmospheric pressure and converts the measured pressure value into the actual sea level pressure based on the United States (U.S.) Standard Atmospheric Table. The value then computed is known as the Altimeter Setting Indicator (ASI) value and is presented to the operator, who is air traffic control (ATC), in a digital format, e.g., 29.50 inches of mercury (inHg). The ASI value is then transmitted by the air traffic controller to an aircraft pilot for use in setting the altimeter in the aircraft. If a perfectly calibrated altimeter is set to the ASI value existing at any given station whose elevation is designated as Hp, the pointer of the altimeter instrument will indicate an altitude of Hp when the instrument is at the altitude of the sensor in the DASI system. (Hp is an elevation in geopotential meters above mean sea level of the altimeter setting indicator pressure sensor.) The purpose of this Operational Test and Evaluation (OT&E) Test Procedure is to describe the Test and Evaluation activities which will ensure the DASI system meets all the requirements of the DASI specification, FAA-E-2569B, and integrates properly into the National Airspace System (NAS). The OT&E procedure includes the test cases, responsibilities, Test Support Hardware and Software, and Test Conduct associated with the testing of the DASI. The DASI test is developed and executed in accordance with the current FAA Test and Evaluation Policy Order, FAA Order 1810.4B. Digital Altimeter Setting Indicator (DASI), Altimeter Setting Indicator (ASI), Sensor Translator (S/T), Digital Display Panel (DDP).

AN (1) AD-A274 718/XAG
FG (2) 110400
210200
130200
010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Initial Evaluation of Burn Characteristics of Phenolic Foam Runway Brake Arrestor Material.

DN (9) Technical note
AU (10) Do, Dung
Wright, Joseph
Hampton, Lawrence
RD (11) Dec 1993
PG (12) 14 Pages
RS (14) DOT/FAA/CT-TN-93/7
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *BRAKES, *COMBUSTION, *FIRE EXTINGUISHING AGENTS, *JET ENGINE FUELS,
*RUNWAYS, *PHENOLIC PLASTICS
CHARRING, CONTROL, FILMS, FIRE SAFETY, FLAME PROPAGATION, FOAM, IGNITION, MANAGEMENT, MATERIALS, PROPAGATION, SURFACES, TEST AND EVALUATION, AIRCRAFT, COMPOSITE MATERIALS
ID (25) *Arrestor materials, AFFF(Aqueous Film Forming Form)
AB (27) Tests of the burn characteristics of a phenolic foam, under evaluation as a runway brake arrestor material, were conducted by the Fire Safety Branch of the Federal Aviation Administration (FAA) Technical Center. The purpose of these tests was to assess the fire propagation properties of phenolic foam when exposed to a free burning Jet A fuel fire and to determine the fire control time of phenolic foam immersed in a jet fuel fire when extinguished using 3-percent Aqueous Film Forming Foam (AFFF). Three pool fire tests were conducted as follows: In the first and second tests, a 12-foot-square bed of phenolic foam material was placed adjacent to a 35-foot-diameter jet fuel fire. This configuration resulted in ignition and flame propagation across to adjacent foam material, resulting in charring of over 30 percent of the exposed surface of the phenolic foam. In the third test, the phenolic foam material was immersed in the jet fuel fire to determine ease of extinguishment using conventional AFFF agent. The fire control time was three times longer than when the phenolic foam material was absent. The extinguishing time was an order of magnitude higher than that without the foam. Phenolic foam materials, Jet fuel fire, Extinguishing agents, Extinguishing agent unit.

AN (1) AD-A275 508/XAG
FG (2) 090300
240300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Vision Impairment and Corrective Considerations of Civil Airmen

AU (10) Nakagawara, Van B.
Wood, Kathryn J.
Montgomery, Ronald W.
RD (11) Dec 1993
PG (12) 10 Pages
RS (14) DOT/FAA/AM-93/21
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIR TRAFFIC, *AVIATION SAFETY, *CIVIL AVIATION, *EYE SAFETY, *PROTECTIVE EQUIPMENT
AIR TRAFFIC CONTROLLERS, AVIATION MEDICINE, DATA BASES, DEMOGRAPHY,
DOCUMENTS, ENVIRONMENTS, EYE, INDUSTRIES, LENSES, MANAGEMENT, NUMBERS,
POLICIES, POPULATION, REGULATIONS, SAFETY, TRAFFIC, UNITED STATES, VISION, VISUAL AIDS, ECONOMICS, VISUAL DEFECTS
ID (25) *Vision impairment
AB (27) Civil aviation is a major commercial and technological industry in the United States. The Federal Aviation Administration (FAA) is responsible for the regulation and promotion of aviation safety in the National Airspace System. The Office of Aviation Medicine oversees investigations on visual disorders and vision corrective devices of airmen and air traffic controllers. A review of the demographics of the civil airman population was performed using FAA publications and databases. Approximately 48% of the civil airman population is > or = 40 years of age (average age = 39.8 years). Many of these aviators are becoming presbyopic and will need corrective devices for near and intermediate vision. In fact, there has been an approximate 12% increase in the number of aviators with near vision restrictions in the last decade. Ophthalmic considerations for eye care practitioners prescribing and dispensing for civil aviators are discussed. This data is useful for the Office of Aviation Medicine to guide policy changes and educational programs for airmen with vision impairment and who use corrective ophthalmic lenses in the aviation environment, particularly the increasing number of presbyopic airmen. Vision, Lenses, Presbyopia, Demography

AN (1) AD-A275 887/XAG
FG (2) 060500
060400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Vision Impairment and Corrective Considerations of Civil Airmen.

DN (9) Final rept.

AU (10) Nakagawara, Van B.

Wood, Kathryn J.

Montgomery, Ronald W.

RD (11) Dec 1993

PG (12) 10 Pages

RS (14) DOT/FAA/AM-92/21

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION MEDICINE, *VISION, *VISUAL DEFECTS, *LENS(EYE)

AVIATION TECHNICIANS, COSTS, POPULATION, TURBOPROP ENGINES,

PISTONS,

ROTARY WING AIRCRAFT, FLIGHT CREWS, SURGICAL IMPLANTATION,

AVIATION

PERSONNEL, ENVIRONMENTS, OPHTHALMOLOGY, AVIATION SAFETY, EYE

SAFETY,

FLIGHT CREWS, VISUAL DEFECTS, AIR TRAFFIC CONTROLLERS, CIVIL

AVIATION

ID (25) Vision impairment

AB (27) Civil aviation is a major commercial and technological industry in the

United States. The two major components of civil aviation activities

are air carrier and general aviation. An estimated 278,000 people/day

rely on air carriers for business and personal travel. As of 1991,

there were approximately 6,054 air carrier aircraft, which include

commercial air carrier operators, commuter air carriers, and air taxis.

Aircraft types include jet, turboprop, piston, and rotary wing aircraft

(helicopters), which flew an estimated 13.5 million flight hours.

Besides the flight crew members, many aviation-related professionals

(maintenance, flight line, airport support staff, etc.), who may never

pilot an aircraft, depend on the air transport industry for supporting

themselves and their families.

AN (1) AD-A275 986/XAG

FG (2) 120700

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF

AVIATION

MEDICINE

TI (6) An Examination of the Operational Error Database for Air Route Traffic

Control Centers.

DN (9) Final rept.

AU (10) Rodgers, Mark D.

RD (11) Dec 1993

PG (12) 30 Pages

RS (14) DOT/FAA/AM-93/22

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DATA BASES, *MONITORING,

*WORKLOAD, *AIR

TRAFFIC CONTROLLERS, *ERROR ANALYSIS

AIR TRAFFIC, AIRCRAFT, APPROACH, AWARENESS, ERRORS, FLIGHT,

FREQUENCY,

HUMANS, MANAGEMENT, PERFORMANCE(HUMAN), PERSONNEL, PROFILES,

QUALITY,

QUALITY ASSURANCE, RESPONSE, SAFETY, SEPARATION, STANDARDS,

TRAFFIC,

ROUTING

AB (27) Monitoring the frequency and determining the causes of operational

errors -defined as the loss of prescribed separation between aircraft -

is one approach to assessing the operational safety of the air traffic

control system. The Federal Aviation Administration (FAA) refers to the

loss of separation standards between aircraft as an operational error

(OE). The extent to which separation is lost determines the severity of

the error. The first study examined the relationships between error

occurrence, controller workload (number of aircraft and traffic

complexity) and causal factors involved. The FAA's Final Operational

Error/Deviation Reports for ARTCC facilities during calendar years

1985-88 comprised the data base. A majority of the errors occurred

under conditions of below average (25%) or average (39%) complexity

AN (1) AD-A276 716/XAG

FG (2) 140200

010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY

NJ

TI (6) Shearographic Inspection of a DeHavilland DHC-7.

DN (9) Technical note

AU (10) Bobo, Stephen N.

RD (11) Dec 1993

PG (12) 24 Pages

RS (14) DOT/FAA/CT-TN92/39

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *INSPECTION, *AGING(MATERIALS)

ADHESIVE BONDING, AGREEMENTS, COMPARISON, CORROSION, DEFORMATION, DEMONSTRATIONS, FAILURE, FATIGUE, FUSELAGES, IMAGES, INTENSITY, INTRUSION, LIGHT, MOISTURE, NATIONAL TRANSPORTATION SYSTEM, PHASE, PRESSURE, REAL TIME, REPAIR, RIVETS, STATIONS, SURFACES, TIME, NONDESTRUCTIVE TESTING

ID (25) *Shearography

AB (27) Under a Cooperative Research and Development Agreement between the Volpe National Transportation Systems Center (VNTSC) and Henson Aviation, Inc., operator of USAir Express, a shearographic demonstration inspection of the fuselage of a DeHavilland DHC-7 aircraft was performed at a USAir repair station at Norfolk, VA, on August 8, 1992. The inspection compared the effectiveness of shearography with currently mandated methods in detecting disbonds in the fuselage. Adhesive bonding is utilized in modern aircraft fuselages, frequently in combination with rivets. As aircraft age, bond failure becomes a major problem, since it may promote fatigue cracking, moisture intrusion, and subsequent corrosion. Any of these events may cause cabin pressure loss and, sometimes, catastrophic fuselage failure. The shearographic method of detecting disbonds depends on the deformation of the aircraft skin under mechanical stimulus. When illuminated by coherent light, the phase relationship and intensity of the light reflected from any two points of the skin changes as a result of this deformation. Surface changes down to 0.00025 millimeter can be detected and displayed as a real-time image of the field of view. Comparison of successive images as the deformation changes permits interpretation of the condition of a bond. In addition, other selected areas of the aircraft suspected to contain disbonds were inspected. No disbonds were found either by shearography or confirming ultrasound readings. Shearography was clearly able to identify the presence of waffle doublers wherever drawings of the aircraft indicated that they should exist. Nondestructive evaluation shearography, Inspection aging aircraft, Aircraft inspection.

AN (1) AD-A277 360/XAG

FG (2) 170703
010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Reduced Vertical Separation in the North Atlantic Experiment Plan.

DN (9) Technical note

AU (10) Nouragas, Paula

RD (11) Dec 1993

PG (12) 21 Pages

RS (14) DOT/FAA/CT-TN93/38

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *COLLISION AVOIDANCE, *VERTICAL ORIENTATION BACKGROUND, DOCUMENTS, NAVIGATION, PHASE, REAL TIME, REGIONS, SEPARATION, SIMULATION, SPECIFICATIONS, TIME, TRAFFIC, REDUCTION

AB (27) This experiment plan provides the background, objectives, and methodologies for conducting the reduced vertical separation minima (RVSM) experiment. The experiment will use real-time simulation to evaluate oceanic air traffic RVSM in the North Atlantic (NAT) region. This document addresses Phase 1 of a 2-phase simulation study. The study is aimed at achieving early implementation of RVSM in the NAT region. Reduced vertical separation minima, Conventional vertical separation minima, Minimum navigation performance specification, West atlantic route system.

AN (1) AD-A277 645/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Soft Ground Arresting System for Airports.

DN (9) Final rept.

AU (10) White, James C.
Agrawal, Satish K.

RD (11) Dec 1993

PG (12) 76 Pages

RS (14) DOT/FAA/CT-93/80

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *SOFT LANDINGS, *AIRCRAFT LANDINGS, *MATHEMATICAL MODELS AVIATION SAFETY, RESPONSE, FOAM, AIRCRAFT TIRES, INTERFACES, FLIGHT LOADS, FLIGHT TESTING, FIELD TESTS

ID (25) *Landing overruns, Soft ground arresting system

AB (27) Aircraft can and do overrun the ends of runways, sometimes with disastrous consequences. Safety overrun areas are designed to provide an additional 1,000 feet of length for stopping overrunning aircraft. At many airports, however, the additional 1,000-foot safety area is not available. At these locations, soft ground arresting systems can be employed to decelerate or stop an overrunning aircraft. A mathematical model representing the interface between the aircraft and the soft ground was developed. This model was used to predict aircraft gear loads, deceleration, and stopping distance within the soft ground

system. The validity of the mathematical model was confirmed by eight tests with the use of an instrumented Boeing 727 aircraft. A phenolic foam bed 680 feet long by 48 feet wide and 18 inches deep was used to demonstrate the effectiveness of safely stopping a Boeing 727 aircraft entering the bed at 50 knots and 60 knots: at 50 knots the aircraft came to a complete stop in 420 feet and at 60 knots in 540 feet. The aircraft was successfully extracted from the bed, the foam was successfully repaired, and airport rescue and firefighting equipment and personnel were able to maneuver without difficulty on the foam.

AN (1) AD-A279 036/XAG

FG (2) 010600

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Federal Aviation Administration Aviation System Capital Investment Plan 1993.

RD (11) Dec 1993

PG (12) 304 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *UNITED STATES GOVERNMENT, *REGULATIONS, *MANAGEMENT

PLANNING AND CONTROL

AVIATION SAFETY, EFFICIENCY, COST EFFECTIVENESS, REPORTS

ID (25) FAA(Federal Aviation Administration), CIP(Capital Investment Plan), NAS(National Airspace System), F and E(Facilities and Equipment), Technology forecasting, Goals, Priorities, Infrastructure replenishment, Supportability

AB (27) This is the Federal Aviation Administration's (FAA) third Aviation System Capital Investment Plan (CIP). It describes the Facilities and Equipment (F and E) programs that the FAA will pursue in addressing key concerns of the national airspace system (NAS), such as safety, efficiency, traffic demands, equipment and facilities, and airspace use. The CIP creates a plan for evolution of the existing NAS through use of these technologies and development of new products obtained from continuing research. The CIP is organized into six chapters. The Introduction provides an overview of the Plan, NAS goals and national priorities, the national air transportation system, a crosswalk to other plans, return on investment, recent changes, and document organization. A key goal of the Secretary of Transportation's National Transportation Policy is the completion of the NAS Plan. To meet and document this goal, the Original NAS Plan chapter presents all

remaining original projects. The Growth chapter describes those requirements that expand, relocate, or consolidate existing facilities/equipment. The Infrastructure Replenishment chapter covers additional items identified since development of the original NAS Plan. This chapter presents projects that refurbish structures, replace obsolete equipment, or relocate facilities to maintain service, improve effectiveness, or reduce cost. The Supportability chapter describes projects that support logistics, provide for personnel training and manage the information and human resource aspects of NAS modernization. The last chapter, New Capabilities, addresses projects which, if implemented, are expected to add significant new capabilities to the NAS

AN (1) AD-A280 564/XAG

FG (2) 170900

170501

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Synthetic Vision Technology Demonstration. Volume 1. Executive Summary.

DN (9) Final rept.

AU (10) Burgess, M.

Chang, T.

Dunford, D.

Hoh, R.

Hudson, B.

RD (11) Dec 1993

PG (12) 112 Pages

RN (18) DOT/FAA/RD-93/40-VOL-1

XH-FAA/RD

RC (20) Unclassified report

DE (23) *HEAD UP DISPLAYS, *LANDING AIDS, *RADAR IMAGES, *INFRARED IMAGES

AIRCRAFT, AIRPORTS, APPROACH, AVIONICS, COLLECTION, COMPUTERS,

DEMONSTRATIONS, DEPARTMENT OF DEFENSE, ELECTRONICS, FACILITIES,

FEET,

FLIGHT TESTING, FOG, IMAGES, INDUSTRIES, INSTRUMENTATION,

MANAGEMENT,

MEASUREMENT, MILLIMETER WAVES, OPERATION, PILOTS, PRECIPITATION,

PROCESSING, RADAR, RAIN, RUNWAYS, SELECTION, SNOW, STATICS,

TAKEOFF,

TEST FACILITIES, TEST AND EVALUATION, TOWERS, VISIBILITY, VISION,

WEATHER, MILLIMETER WAVE EQUIPMENT

AB (27) This report contains the description and results of a Synthetic Vision technology demonstration program conducted jointly by the Federal Aviation Administration, the Department of Defense and industry. The

relevant technologies including millimeter wave radar sensors, infrared sensors, head-up displays, and computer processing were developed and tested in static tower tests and in flight tests in which the weather conditions were carefully measured and documented. The purpose of the program was to evaluate and demonstrate the performance of the imaging sensors and of the complete imaging system during aircraft approaches and landings in low-visibility conditions. The static tower test facility used was the Avionics Tower Test Facility, located at Wright Patterson AFB, in which candidate sensors were set up at approximately 260 feet overlooking a nearby runway. The runway scene imaged by the sensors was instrumented to carefully measure the characteristics of fog, rain and snow as those conditions occurred in 1991-1992. Sensor performance and phenomenology was then fully characterized to provide a basis for further sensor development and for selection of sensors with which to proceed to flight test. The test aircraft used was a Gulfstream 11 configured with a comprehensive data collection system and instrumentation to permit measurement of fog and precipitation through which the aircraft was flown as well as system and pilot performance during those operations. Millimeter wave sensors and an infrared sensor were used to provide an electronic image of the runway on both head-up and head-down displays during approach landing and takeoff. Test and demonstration flights were flown into 27 different airports in a wide variety of rain, fog and snow conditions during the period of May through December, 1992.

AN (1) AD-A281 051/XAG

FG (2) 170900

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Synthetic Vision Technology Demonstration. Volume 3. Flight Tests.

DN (9) Final rept.

AU (10) Burgess, Malcolm A.

Chang, Terence

Dunford, Dale E.

Hoh, Roger H.

Horne, Walter F.

RD (11) Dec 1993

PG (12) 401 Pages

RN (18) DOT/FAA/RD-93/40-VOL-3

XH-XD

RC (20) Unclassified report

NO (21) See also Volume 4, AD-A281 052.

DE (23) *COMMERCIAL AIRCRAFT, *HEAD UP DISPLAYS, *FLIGHT TESTING, *MILLIMETER

WAVES, *RADAR, *INFRARED DETECTORS, *PROTOTYPES, *VISIBILITY AIRPORTS, APPROACH, AVIONICS, AIRCRAFT LANDINGS, DATA ACQUISITION, COMPUTERS, DEMONSTRATIONS, DEPARTMENT OF DEFENSE, ELECTRONICS,

FLIGHT,

FOG, HEAD(ANATOMY), IMAGES, INDUSTRIES, INSTRUMENTATION, LANDING, MEASUREMENT, PILOTS, PRECIPITATION, RAIN, RUNWAYS, SELECTION, SNOW, STATICS, TAKEOFF, TEST AND EVALUATION, TOWERS, VISION, WEATHER

ID (25) *Millimeter wave radar, Low visibility, Head displays, FPSP(Functional Prototype Synthetic Vision System)

AB (27) This report contains the description and results of a Synthetic Vision technology demonstration program conducted jointly by the Federal Aviation Administration, the Department of Defense and industry. The relevant technologies including millimeter wave radar sensors, infrared sensors, head-up displays, and computer processing were developed and tested in static tower tests and in flight tests in which the weather conditions were carefully measured and documented. The purpose of the program was to evaluate and demonstrate the performance of the imaging sensors and of the complete imaging system during aircraft approaches and landings in low-visibility conditions. The static tower test Facility used was the Avionics Tower Test Facility, located at Wright Patterson AFB, in which candidate sensors were set up at approximately 260 feet overlooking a nearby runway. The runway scene imaged by the sensors was instrumented to carefully measure the characteristics of fog, rain and snow as those conditions occurred in 1991-1992. Sensor performance and phenomenology was then fully characterized to provide a basis for further sensor development and for

AN (1) AD-A281 052/XAG

FG (2) 040200

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Synthetic Vision Technology Demonstration. Volume 4. Appendices.

DN (9) Final rept.

AU (10) Burgess, Malcolm A.

Chang, Terence

Dunford, Dale E.

Hoh, Roger H.
Horne, Walter F.

RD (11) Dec 1993

PG (12) 318 Pages

RN (18) DOT/FAA/RD-93/40-VOL-3
XH-XD

RC (20) Unclassified report

NO (21) See also Volume 3, AD-A281 051.

DE (23) *LANDING AIDS, *MILLIMETER WAVES, *RADAR IMAGES, *INFRARED IMAGES,
*INFRARED DETECTORS, *METEOROLOGICAL DATA
AIRCRAFT, AIRPORTS, APPROACH, AVIONICS, COLLECTION, COMPUTERS,
DEMONSTRATIONS, DEPARTMENT OF DEFENSE, ELECTRONICS, FACILITIES,

FLIGHT

TESTING, FOG, HEAD UP DISPLAYS, IMAGES, INDUSTRIES, INSTRUMENTATION,
MANAGEMENT, MEASUREMENT, OPERATION, PILOTS, PRECIPITATION,

PROCESSING,

RADAR, RAIN, RUNWAYS, SELECTION, SNOW, STATICS, TAKEOFF, TEST
FACILITIES, TEST AND EVALUATION, TOWERS, VISIBILITY, VISION, WEATHER

AB (27) This report contains the description and results of a Synthetic Vision technology demonstration program conducted jointly by the Federal Aviation Administration, the Department of Defense and industry. The relevant technologies including millimeter wave radar sensors, infrared-sensors, head-up displays, and computer processing were developed and tested in static tower tests and in flight tests in which the weather conditions were carefully measured and documented. The purpose of the program was to evaluate and demonstrate the performance of the imaging sensors and of the complete imaging system during aircraft approaches and landings in low-visibility conditions. The static tower test facility used was the Avionics Tower Test Facility, located at Wright Patterson AFB, in which candidate sensors were set up at approximately 260 feet overlooking a nearby runway. The runway scene imaged by the sensors was instrumented to carefully measure the characteristics of fog, rain and snow as those conditions occurred in 1991-1992. Sensor performance and phenomenology was then fully characterized to provide a basis for further sensor development and for selection of sensors with which to proceed to flight test. The test aircraft used was a Gulfstream II configured with a comprehensive data collection system and instrumentation to permit measurement of fog and precipitation through which the aircraft was flown as well as system and pilot performance during those operations. Synthetic vision, Flight test, MMW radar.

AN (1) AD-A281 141/XAG

FG (2) 040200
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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Synthetic Vision Technology Demonstration. Volume 2. Sensor Tower
Testing.

DN (9) Final rept.

AU (10) Hudson, Brian H.
Gary, Molly J.
Burgess, Malcolm A.
Zak, J. A.

RD (11) Dec 1993

PG (12) 299 Pages

RS (14) DOT/FAA/RD-93/40-VOL-2

RN (18) XH-XD

RC (20) Unclassified report

NO (21) See also Volume 3, AD-A281 051.

DE (23) *INFRARED IMAGES, *INFRARED DETECTORS, *LANDING AIDS, *MILLIMETER
WAVES, *RADAR IMAGES, *METEOROLOGICAL DATA
AIRCRAFT, AIRPORTS, APPROACH, AVIONICS, COLLECTION, COMPUTERS,
DEMONSTRATIONS, DEPARTMENT OF DEFENSE, ELECTRONICS, FLIGHT

TESTING,

FOG, GULF STREAM, HEAD UP DISPLAYS, IMAGES, INDUSTRIES,
INSTRUMENTATION, MANAGEMENT, MEASUREMENT, OPERATION, PILOTS,
PRECIPITATION, PROCESSING, RADAR, RAIN, RUNWAYS, SELECTION, SNOW,
STATICS, TAKEOFF, TEST FACILITIES, TEST AND EVALUATION, TOWERS,
VISIBILITY, VISION, WEATHER

AB (27) This report contains the description and results of a Synthetic Vision technology demonstration program conducted jointly by the Federal Aviation Administration, the Department of Defense and industry. The relevant technologies including millimeter wave radar sensors, infrared sensors, head-up displays, and computer processing were developed and tested in static tower tests and in flight tests in which the weather conditions were carefully measured and documented. The purpose of the program was to evaluate and demonstrate the performance of the imaging sensors and of the complete imaging system during aircraft approaches and Landings in low-visibility conditions. The static tower test facility used was the Avionics Tower Test Facility, located at Wright Patterson AFB, in which candidate sensors were set up at approximately 260 feet overlooking a nearby runway. The runway scene imaged by the sensors was instrumented to carefully measure the characteristics of fog, rain and snow as, those conditions occurred in 1991-1992. Sensor

performance and phenomenology was then fully characterized to provide a basis for further sensor development and for selection of sensors with which to proceed to flight test. The test aircraft used was a Gulf stream 11 configured with a comprehensive data collection system and instrumentation to permit measurement of fog and precipitation through which the aircraft was flown as well as system and pilot performance during those operations. Millimeter wave sensors and an infrared sensor were used to provide an electronic image of the runway on both head-up and head-down displays during approach, landing and takeoff. Test and demonstration flights were flown into 27 different airports in a wide variety of rain, fog and snow conditions during the period of May through December, 1992.

AN (1) AD-A286 309/XAG

FG (2) 010309

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) Census U.S. Civil Aircraft Calendar Year 1993.

DN (9) Annual rept.

RD (11) 31 Dec 1993

PG (12) 444 Pages

RS (14) FAA-APO-94-10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *STATISTICAL DATA

UNITED STATES, AIRCRAFT INDUSTRY, COMMERCIAL AIRCRAFT, GENERAL AVIATION

AIRCRAFT, PASSENGER AIRCRAFT, CENSUS, TABLES(DATA), MANAGEMENT PLANNING

AND CONTROL, UNITED STATES GOVERNMENT

ID (25) Air carriers, Registered aircraft

AB (27) This report present information about the U.S. Civil Aircraft Fleet. It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner

AN (1) AD-A286 754/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airport Activity Statistics of Certificated Route Air Carriers, 1993.

DN (9) Rept. for period ending 31 Dec 93.

RD (11) 31 Dec 1993

PG (12) 1204 Pages

RS (14) FAA-APO-94-9

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC

CIVIL AVIATION, TABLES(DATA), STATISTICAL DATA, AIRPORTS, PASSENGER AIRCRAFT, CARGO

AN (1) AD-A291 446/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) Census of U.S. Civil Aircraft, Calendar Year 1993.

DN (9) Annual rept.

RD (11) 31 Dec 1993

PG (12) 446 Pages

RS (14) FAA-APO-94-10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *GENERAL AVIATION AIRCRAFT

FILES(RECORDS), AIRCRAFT INDUSTRY, STATISTICAL DATA, HELICOPTERS, TABLES(DATA), INVENTORY, PASSENGER AIRCRAFT, FIXED WING AIRCRAFT, CENSUS

AB (27) This report present information about the U.S. Civil Aircraft Fleet.

It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner. (AN)

AN (1) AD-A274 421/XAG

FG (2) 230600

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131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Impact of Improved Materials and Cabin Water Spray on Commuter Aircraft

Postcrash Fire Survivability.

DN (9) Technical note
AU (10) Marker, Timothy R.
RD (11) Nov 1993
PG (12) 35 Pages
RS (14) DOT/FAA/CT-TN93/40
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *SURVIVABILITY, *FIRE RESISTANT MATERIALS, *FIRE PROTECTION, *FIRE SAFETY, *FIRE PREVENTION, *AVIATION ACCIDENTS CHANNELS, FLAME PROPAGATION, FUSELAGES, HEAT, IMPACT, LAYERS, NOZZLES, PANELS, REGULATIONS, SMOKE, SPRAYS, TEMPERATURE, TEST AND EVALUATION, TRANSPORT AIRCRAFT, CRASHES, COMMERCIAL AIRCRAFT
ID (25) FAR(Federal Aviation Regulations), Zone cabin water spray system, Commuter aircraft
AB (27) Twelve full-scale tests were conducted in a modified Metro-liner fuselage to study the impact of using improved fire retardant materials and a cabin water spray system on postcrash fire survivability. Currently, commuter category aircraft as defined in Part 23 are exempt from meeting the stringent Federal Aviation Regulations (FAR's) requiring seat cushion fire blocking layers and low heat/smoke release panels in large transport aircraft. A zoned cabin water spray system which allowed for the individual activation of spray zones depending on cabin temperature was designed and installed in the fuselage. The system consisted of four 100 inch long zones, each containing 6 nozzles. Of the twelve tests, five were run with the water spray system and a different combination of cabin materials. These five tests were repeated without the water spray system in order to establish baseline data for each material combination. Two additional tests were conducted to investigate the impact of a partially obstructed forward test and also to evaluate the effect that the channel-type floor geometry used in the Metro-liner aircraft has on flame propagation during a cabin fire. Temperature, smoke levels, and gas concentrations were continuously monitored at a forward cabin location and each test was recorded on video. Zoned Cabin Water Spray System Commuter Aircraft Fractional Effective Dose

AN (1) AD-A274 457/XAG

FG (2) 010600

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) ATC/Pilot Voice Communications - A Survey of the Literature.

DN (9) Final rept.

AU (10) Prinzo, O. V.

Britton, Thomas W.

RD (11) Nov 1993

PG (12) 39 Pages

RS (14) DOT/FAA/AM-93/20

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PSYCHOLINGUISTICS, *VOICE COMMUNICATIONS, *COMMUNICATION AND RADIO

SYSTEMS, *LITERATURE SURVEYS, *AIR TRAFFIC CONTROL SYSTEMS

AIR TRAFFIC, AIRPORTS, AVIATION SAFETY, COGNITION, COMPREHENSION, CONTROL, ERRORS, INFORMATION PROCESSING, INSTRUCTIONAL

MATERIALS,

LINGUISTICS, LOUDNESS, MONITORS, PILOTS, SPEECH, SURVEYS, AIR

TRAFFIC

CONTROLLERS, ACOUSTICS, SPEECH TRANSMISSION, SPEECH ARTICULATION

AB (27) The first radio-equipped control tower in the United States opened at the Cleveland Municipal Airport in 1930. From that time to the present, voice radio communications have played a primary role in air safety.

Verbal communications in air traffic control (ATC) operations have been frequently cited as causal factors in operational errors and pilot deviations in the FAA Operational Error and Deviation System, the NASA

Aviation Safety Reporting System (ASRS), and reports derived from government-sponsored research projects. Collectively, the data provided by these programs indicate that communications constitute a significant

problem for pilots and controllers. Although the communications problem was well known the research literature was fragmented, making it difficult to appreciate the various types of verbal communications

problems that existed and their unique influence on the quality of ATC/pilot communications. This is a survey of the voice radio communications literature. The 43 reports in the review represent

survey data, field studies, laboratory studies, narrative reports, and reviews. The survey topics pertain to communications taxonomies, acoustical correlates and cognitive/psycholinguistic perspectives.

Communications taxonomies were used to identify the frequency and types of information that constitute routine communications, as well as those communications involved in operational errors, pilot deviations, and

other safety-related events. Acoustical correlate methodologies identified some qualities of a speaker's voice, such as loudness, pitch, and speech rate, which might be used potentially to monitor stress, mental workload, and other forms of psychological or physiological factors that affect performance.

AN (1) AD-A274 561/XAG

FG (2) 050600

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Factors Associated with Continuance Commitment to FAA Matrix Teams.

DN (9) Final rept.

AU (10) Hellman, Chan M.

Witt, L. A.

Hilton, Thomas F.

RD (11) Nov 1993

PG (12) 10 Pages

RS (14) DOT/FAA/AM-93/18

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DECISION MAKING, *TEAMS(PERSONNEL)

ACQUISITION, ENGINEERING, FUNCTIONS, IMPACT, INTERACTIONS, ORGANIZATIONS, PERCEPTION, PRODUCTIVITY, QUALITY, QUALITY

ASSURANCE,

QUESTIONNAIRES, STRATEGY

AB (27) Several organizations within the FAA employ matrix teams to achieve cross-functional coordination. Matrix team members typically represent different organizational functions required for project accomplishment (e.g., research and development, engineering, quality assurance, legal, acquisition, and customers). The matrix team strategy decentralizes decision-making to the level of a project leader, so that knowledge relevant to the decision can be collected and outcomes closely monitored. While there are several factors that influence productivity of matrix teams, member turnover can have a substantial impact. Thus, identifying the factors that affect a productive member's continued membership to the team is important. This report summarizes data gathered as part of a research task initiated at the request of the Associate Administrator for NAS development (AND-1). Questionnaires were developed to evaluate how well existing AND matrix teams were functioning. These data will also serve as a baseline against which to gauge future development of the matrix team program. The present paper

examined two issues: (1) the relationship between perceptions of the quality of member-team interactions and individual member commitment to remain on the team (continuance commitment) and, (2) whether or not that relationship might be influenced by the degree to which a member identified with the team as opposed to his/her individual office, function, or profession. Results from 141 members of 22 FAA matrix teams indicated a significant relationship between the quality of member-team interactions and continuance commitment. Continuance commitment, Matrix teams, Team member interactions.

AN (1) AD-A275 115/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Los Angeles International Airport Instrument Landing System Approach Data Collection and Reduction. Phase 1 Final Report.

DN (9) Technical note Nov 91-Apr 92

AU (10) Thomas, J.

Timoteo, D.

Hoang, P.

RD (11) Nov 1993

PG (12) 72 Pages

RS (14) DOT/FAA/CT-TN93/12

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS, *DATA ACQUISITION

ACCURACY, AIRCRAFT, AIRPORTS, APPROACH, BEHAVIOR, DATA BASES, DATA REDUCTION, ERRORS, INTERNATIONAL AIRPORTS, MANAGEMENT, NAUTICAL,

RADAR,

RUNWAYS, SECONDARY, SURVEILLANCE, GROUND CONTROLLED APPROACH

RADAR, LOS

ANGELES(CALIFORNIA)

AB (27) Position data on aircraft flying Instrument Landing System (ILS)

approaches from 40 nautical miles (nmi) down to runway threshold were collected at Los Angeles International Airport (LAX) between November 26, 1991 and April 25, 1992. The purpose of the data collection was to provide an accurate database of navigational performance of aircraft flying ILS approaches at distances between 10 nmi and 32 nmi. Aircraft position data were collected using the in-place LAX surveillance primary and secondary radars. The data were reduced and analyzed at the Federal Aviation Administration (FAA) technical Center by ACD-340 personnel. The discussion in this Final Report concerns the accuracy of the collected position data and possible sources of error in the data

collection. ILS Approaches, Data collection, Data reduction, Aircraft localizer behavior.

AN (1) AD-A272 124/XAG

**FG (2) 120500
240100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Emissions Model for Ground Support Equipment: User's Guide.

DN (9) Technical rept.

AU (10) Segal, H. M.
Molina, J. M.

RD (11) Oct 1993

PG (12) 18 Pages

RS (14) DOT/FAA-EE-93-2

RN (18) AL/EQ-1993/0025
XC-AL/EQ

RC (20) Unclassified report

DE (23) *EMISSION, *GROUND SUPPORT EQUIPMENT, *DATA BASES, *MICROCOMPUTERS

AIR, AIR QUALITY, AIRCRAFT, AIRPORTS, BOMBS, DISPERSIONS, ESTIMATES, FUEL TRUCKS, FUELS, GENERATORS, GROUND SUPPORT, IMPACT, INPUT, INVENTORY, MODELS, OPERATION, PARAMETERS, QUALITY, TOOLS, TRUCKS

AB (27) This report describes how to change Ground Support Equipment (GSE) input parameters of the Emission and Dispersion Model System (EDMS) (Segal, H.M.) to reflect what if investigations associated with GSE equipment changes. EDMS is a pc-based air quality impact assessment tool for airports and airbases. The GSE extension adds the capability to estimate, inventory, and report emissions from diesel and gas-powered support equipment, such as generators, fuel trucks, air conditioners, and bomb lifts. This user's guide provides a brief overview of GSE hardware and operations. It also demonstrates how to use GSE options by guiding the reader through a sample problem which adds a new GSE source to the list of GSE's and links the new GSE source to a specific aircraft.

AN (1) AD-A273 071/XAG

**FG (2) 170703
170900**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Test and Evaluation (OT&E) Operational Air Traffic Control Evaluation Plan for the Prototype Airport Surveillance Radar Wind Shear Processor (ASR-WSP) at Albuquerque International Airport.

DN (9) Technical note

AU (10) Martin, Patrick
Ware, Bruce

RD (11) Oct 1993

PG (12) 26 Pages

RS (14) DOT/FAA/CT-TN93/19

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *APPROACH, *RADAR

AIR, AIRPORTS, ALTITUDE, CLIMATE, CONTROL, ENVIRONMENTS, GUSTS, HUMAN

FACTORS ENGINEERING, INTERFACES, LABORATORIES, LOW ALTITUDE, MANAGEMENT, MASSACHUSETTS, MITES, MODIFICATION, PROTOTYPES, SURVEILLANCE, TERMINALS, TOWERS, TRAFFIC, WIND, WIND SHEAR

ID (25) WSP(Wind Shear Radars), ASR(Airport Surveillance Radars)

AB (27) The Massachusetts Institute of Technology, Lincoln Laboratories (MIT-LL), operating in support of the Federal Aviation Administration

(FAA) Terminal Radar Program has developed a prototype Wind Shear

Processor (WSP) modification to interface with Airport Surveillance

Radars (ASR) 8 and 9. The WSP enables the ASR radars to automatically detect low altitude wind shear phenomena such as microbursts and gust

fronts. This plan describes the methods, procedures, roles, and

responsibilities in evaluating the operational suitability and

effectiveness of an ASR-9 with the WSP modification in the high and dry

climate of Albuquerque, NM. The suitability evaluation is limited to

the performance of the WSP's displays in the human factors environment

of the Air Traffic Control (ATC) Tower and Terminal Radar Approach

Control (TRACON). ASR Wind Shear Processor (ASR-WSP), Human Factors

Evaluation ATC Tower/TRACON, Microbursts and gust fronts.

AN (1) AD-A273 075/XAG

**FG (2) 170900
040200**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Next Generation Weather Radar (NEXRAD) Principal User Processor (PUP) operational Test and Evaluation (OT&E) Operational Report.

DN (9) Technical note

AU (10) Stretcher, Baxter

RD (11) Oct 1993

PG (12) 38 Pages
 RS (14) DOT/FAA/CT-TN93/36
 RN (18) XH-XD
 RC (20) Unclassified report
 DE (23) *METEOROLOGICAL RADAR
 CONTROL CENTERS, QUALITY, QUESTIONNAIRES, RADAR, TEST AND
 EVALUATION,
 TRAINING, WEATHER, AIR TRAFFIC CONTROL SYSTEMS, OPERATIONAL
 EFFECTIVENESS, DOPPLER RADAR
 ID (25) NEXRAD(Next Generation Weather Radar)
 AB (27) This report details the results of the Operational Test and Evaluation
 (OT&E) Operational Test of the Next Generation Weather Radar (NEXRAD),
 Principle User Processor (PUP). The PUP was evaluated at the Leesburg,
 Virginia, and Houston, Texas, Air Route Traffic Control Centers (ARTCC)
 during the period March 22 through April 1, 1993. The objective of the
 OT&E Operational Test was to obtain the Central Weather Service Unit
 (CWSU) meteorologists' evaluation of the NEXRAD PUP. A questionnaire
 was used to obtain responses from the meteorologists. This report
 includes the meteorologists' evaluation of the quality and quantity of
 the products provided by the PUP, the workload, operational procedures,
 radar connections, and training. Next Generation Weather Radar
 (NEXRAD), Principle User Processor (PUP), Central Weather Service Unit
 (CWSU).

AN (1) AD-A273 351/XAG
FG (2) 120500
120600
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) System Support Computer Complex-1 (SSCC-1): An FAA Technical Center
Operations Concept Document
 AU (10) Williams, Cheryl
 RD (11) Oct 1993
 PG (12) 110 Pages
 RS (14) DOT/FAA/CT-TN93/27
 RN (18) XH-XD
 RC (20) Unclassified report
 DE (23) *COMPUTER ARCHITECTURE, *SOFTWARE ENGINEERING
 AUTOMATION, COMPUTERS, IDENTIFICATION, MAINTENANCE, PHASE, TOOLS,
 AIR
 TRAFFIC CONTROL SYSTEMS, MAINTENANCE MANAGEMENT
 ID (25) AAS(Advanced Automation System), ISSS(Initial Sector Suite System)
 AB (27) The purpose of the system Support Computer Complex (SSCC) Operations

Concept Document is to provide a high-level overview and a broad
 understanding of the SSCC-1 portion of the Advanced Automation System
 (AAS) . To achieve this purpose, the document defines the operational
 processes necessary to support the Initial Sector Suite System (ISSS)
 segment of the AAS. This includes identification of the users and their
 respective tasks, and definition of the procedures necessary to
 accomplish those tasks. It also identifies the diverse set of tools
 which will be used to provide the necessary software development,
 testing, and maintenance of the AAS. This version of the SSCC
 Operations Concept Document discusses the SSCC-1 phase and operations
 aspects for the ISSS segment. As the various AAS segments are
 implemented, this document will be updated to provide the reader with
 information relative to the changes from the previous segment upgrade.

AN (1) AD-A273 499/XAG
FG (2) 010600
010300
110700
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Full-Scale Fire Testing of Seat Component Materials.
 DN (9) Technical note
 AU (10) Gahill, Patricia
 RD (11) Oct 1993
 PG (12) 26 Pages
 RS (14) DOT/FAA/CT-TN93/13
 RN (18) XH-DOT/FAA/CT
 RC (20) Unclassified report
 DE (23) *FIRE RESISTANT MATERIALS, *FIRE PREVENTION, *AVIATION SAFETY,
 *AIRCRAFT SEATS
 AIRCRAFT, AIRCRAFT CABINS, CARBON DIOXIDE, CARBON MONOXIDE,
 DEPLETION,
 EMISSION, FIRE HAZARDS, FUSELAGES, HEAT, MONOXIDES, OXYGEN,
 REQUIREMENTS, SCALE, SMOKE, SURFACES, TEMPERATURE, FIRE SAFETY,
 FIRE
 RESISTANCE, AIRCRAFT FIRES
 ID (25) *Thermoplastic materials
 AB (27) Full-scale fire testing was conducted in a furnished aircraft cabin to
 compare a currently used thermoplastic material and a new thermoplastic
 material with low heat and smoke release characteristics used in
 forming seat components. This testing was conducted due to questions
 concerning the exemption of seat components from the heat release and
 smoke requirement mandated for certain large surface area components in

the aircraft fuselage. Results of the fullscale testing showed no significant difference in temperatures, smoke levels, or oxygen depletion between the two materials. While carbon monoxide and carbon dioxide emissions were slightly higher with the currently used material, it cannot be concluded that this material was the cause. Based on the overall data, it appears that the small amount of seat component material is not significantly contributing to increased fire hazards. Full-scale fire testing, Thermoplastic, Seat components.

AN (1) AD-A270 841/XAG

FG (2) 170703

170900

040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Traffic Control (ATC) Evaluation of the Prototype Terminal Doppler Weather Radar (TDWR) System.

DN (9) Final rept.

AU (10) Stretcher, Baxter

RD (11) Sep 1993

PG (12) 23 Pages

RS (14) DOT/FAA/CT-TN93/20

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *METEOROLOGICAL RADAR, *DOPPLER RADAR

CONFIGURATIONS, FELTS, FLORIDA, INTERNATIONAL AIRPORTS, MANAGEMENT,

OPERATION, PLANNING, PROTOTYPES, RADAR, RESPONSE, RUNWAYS, SUPERVISORS,

TERMINALS, TEST AND EVALUATION, TOWERS, TRAFFIC, WEATHER, WIND

AB (27) This report details the results of the Federal Aviation Administration (FAA) operational evaluation of the Prototype Terminal Doppler Weather Radar (TDWR). The evaluation was conducted by the controllers and supervisors at the Orlando International Airport (MCO), Orlando, Florida. The purpose of the test was to obtain the controller's and supervisor's evaluation of the Geographical Situation Display (GSD) and the Ribbon Display Terminal (RDT) installed at the air traffic control tower (ATCT). The responses from the air traffic controllers and supervisors led to several conclusions concerning the prototype TDWR: (1) the participants generally liked the system and felt that the prototype TDWR was suitable and effective for air traffic control (ATC) operations, (2) the supervisors, in particular, were pleased with the

GSD as it helped them in planning and making runway configuration decisions prior to weather events, and (3) the controllers were pleased with the products displayed on the RDT and felt that the RDT was effective and suitable for their operations. There were, however, some reservations about the size of the RDT and the location of the centerfield wind on the RDT. The responses from the controllers indicated that they preferred the smaller RDT (12 x 11 x 61) for operational purposes and would like to have the centerfield wind displayed in the upper left corner of the RDT. Terminal Doppler Weather Radar (TDWR), Geographical Situation Display (GSD), Ribbon Display Terminal (RDT).

AN (1) AD-A271 738/XAG

FG (2) 060400

230200

010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Validation of an Inexpensive Illuminant for Aeromedical Color Vision Screening.

DN (9) Final rept.

AU (10) Milburn, Nelda J.

Mertens, Henry W.

RD (11) Sep 1993

PG (12) 10 Pages

RS (14) DOT/FAA/AM-93/16

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COLOR VISION, *ILLUMINANTS, *LIGHT SOURCES, *AVIATION MEDICINE, *AVIATION PERSONNEL

BOOKS, DEFICIENCIES, ERRORS, FAILURE, HEIGHT, ILLUMINATION, LAMPS, LIGHT, PLATES, PRODUCTION, RATES, SUBSTITUTES, TEST AND EVALUATION, TUBES, VALUE, PERFORMANCE TESTS, PERFORMANCE(HUMAN)

ID (25) Color vision screening, Color vision deficiency

AB (27) An inexpensive illuminant for color vision screening suggested by the NRC-NAS Committee on Vision was evaluated as a substitute for the Macbeth Easel Lamp. The Macbeth Easel Lamp is the recommended illuminant for pseudoisochromatic plate tests used in aeromedical color vision screening, but is no longer in production. Subjects included both normal trichromats (P=145) and persons with varying degrees and types of color vision deficiencies (p=152) as diagnosed with the Nagel Type I anomaloscope. Subjects were given the Dvorine

Pseudo-Isochromatic Plate Test illuminated by each of the two light sources. One Verilux True Color Light tube (FI5T8VLX) was installed in an adjustable fluorescent desk lamp and position at a height of 24 in above the center of the Dvorine test book to give a 270 lux illumination to match the illumination produced by the Macbeth light source. The two presentations of the Dvorine were separated by several other color vision tests. Each subject was given a different random order of plates 2-15 for each light source. Pass/Fail performance with the Dvorine test was virtually the same with the two light sources when criterion for failure was 3 or more errors. The Verilux True Color Light obtained a Kappa value of .97, and very low false positive (.021) and false negative (.006) rates when compared to the Macbeth Easel Lamp. Performance and possible applications of the Verilux True Color Light in aeromedical color vision screening are discussed. Color vision screening, Color vision deficiency, Illumination.

AN (1) AD-A271 739/XAG

FG (2) 060400

230200

010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Validity of FAA-Approved Color Vision Tests for Class II and Class III aeromedical Screening.

DN (9) Final rept.

AU (10) Mertens, Henry W.

Milburn, Nelda J.

RD (11) Sep 1993

PG (12) 14 Pages

RS (14) DOT/FAA/AM-93/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION MEDICINE, *COLOR VISION, *AVIATION PERSONNEL,

***PERFORMANCE**

TESTS, *THRESHOLD EFFECTS

DEFICIENCIES, LIGHT, MEDICAL EXAMINATION, MEDICINE, NIGHT, PILOTS, PLATES, PREDICTIONS, SCHOOLS, SIGNAL LIGHTS, SIGNALS, STANDARDS,

TEST

AND EVALUATION, WAIVER, PERFORMANCE(HUMAN)

ID (25) Color vision screening, Color vision Deficiency, *Aeromedical screening

AB (27) All clinical color vision tests currently used in the medical

examination of pilots were studied regarding validity for prediction of

performance on practical tests of ability to discriminate the aviation signal colors, red, green, and white given under both day and night conditions. Those same practical tests are given to pilots with color vision deficiency who apply for a waiver of the Class II or Class III color vision standards. Subjects with varying type and degree of color vision deficiency (n=122) and subjects with normal color vision (n=120) were classified with the anomaloscope and given both practical and clinical tests. The clinical color vision tests included the American Optical Company plates (1965 and 1940 Editions), AOCHRR plates (2nd Edition), Ishihara plates (14-, 16-, 24-, and 38-plate tests), Dvorine plates, Richmond plates, Farnsworth Lantern, School of Aviation Medicine Color Threshold Tester, Titmus Tester, Titmus II Tester, OPTEC 2000 Tester, and Keystone Orthoscope/Telebinocular test. The criterion tests required naming the colors of actual signals produced by the Aviation Signal Light, with the same test procedures and viewing distances used in actual practical tests. The Farnsworth Lantern and several plate tests were the best clinical tests for predicting ability to identify the colors of aviation signals. Individuals with color vision deficiency identified signal colors better at night than during the day. Recommendations for improving the disposition criteria of some clinical tests, and for discontinuing several obsolete tests are discussed. Aviation signal lights, Color vision screening, Color vision deficiency

AN (1) AD-A273 550/XAG

FG (2) 010500

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Combined 1991 and 1992 Robinson - 22B (R-22) Parking Test Results.

DN (9) Technical rept. Sep 91-Oct 92

AU (10) Weiss, Rosanne M.

RD (11) Sep 1993

PG (12) 71 Pages

RS (14) DOT/FAA/CT-TN93/6

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *HELIPORTS, *PARKING FACILITIES

AIRPORTS, CLEARANCES, COLLECTION, CROSSWINDS, DEMONSTRATIONS,

DIAMETERS, DOCUMENTS, FEET, FLIGHT, HEAD(ANATOMY), HELICOPTERS,

HELIPADS, INTERNATIONAL, INTERNATIONAL AIRPORTS, MANAGEMENT,

MANEUVERS,

METHODOLOGY, PERCEPTION, PILOTS, ROTORS, SURFACES, TEST AND EVALUATION,

URBAN AREAS, DAYLIGHT, NIGHT, VISUAL FLIGHT RULES, VISUAL PERCEPTION
ID (25) FAA(Federal Aviation Administration), UH-1H Aircraft, H-1 Aircraft
AB (27) Tests were conducted in the fall of 1991 and 1992 at the Federal Aviation Administration (FAA) Technical Center to examine issues regarding rotor tip clearances for parking areas at heliports. These tests were initiated as a follow-on to previous parking tests documented in DOT/FAA/CT-TN88/30, 'Heliport Surface Maneuvering Test Results,' and DOT/FAA/CT-TN92/1, 'Helicopter Nighttime Parking Test Results-UH-1.' Since those tests utilized a medium-size helicopter with a rotor diameter of 48 feet, similar tests were requested using a smaller helicopter with a rotor diameter of less than 30 feet. This report documents the results of these follow-on parking tests which used a Robinson-22B (R-22) helicopter. Over 480 maneuvers were conducted at the FAA Technical Center's National Concepts Development and Demonstration Heliport/Vertiport, Atlantic City International Airport, NJ. All were conducted under head, tail, and crosswind conditions, both with and without an obstacle on the helipad. Pilot subjective data, in reference to these maneuvers, were collected via post-maneuver and post-flight questions. Data collection and analysis methodology and objective, as well as subjective issues, are discussed. Statistical and graphical analysis of pilot performance and perception data are provided. Conclusions are drawn about considerations that must be given to parking clearance criteria at heliports. Heliport, Heliport parking, Rotor tip clearance.

AN (1) AD-A273 722/XAG

FG (2) 050900
050800

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Traffic Controller Working Memory: Considerations in Air Traffic Control Tactical Operations.

DN (9) Technical note. Oct 92-Sep 93

AU (10) Stein, Earl S.
Garland, Daniel

RD (11) Sep 1993

PG (12) 71 Pages

RS (14) DOT/FAA/CT-TN-93/37

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *LIMITATIONS, *PERFORMANCE(HUMAN),

*MEMORY(PSYCHOLOGY)

AIR TRAFFIC, AIRCRAFT, AWARENESS, CONTROL, ENVIRONMENTS, HUMANS, OPERATION, PLANNING, REQUIREMENTS, SEQUENCES, TRAFFIC, TRANSIENTS, VULNERABILITY

ID (25) *ATC(Air Traffic Control), Information, Strategic planning, Working memory, Memory enhancements, Controller memory, Controller performance, Memory lasers, Working memory

AB (27) The Air Traffic Control (ATC) environment is characterized by a continuous sequence of ever-changing, transient information, such as a series of aircraft being handled by an air traffic controller which must be encoded and retained, primarily, for tactical use (3 to 5 minutes) and secondarily, for strategic planning. This information is complicated by the limitations and constraints of human memory, in particular, working memory. Working memory can potentially degrade performance. The primary objective of this report is to raise an awareness of the memory requirements of ATC tactical operations by presenting information on working memory processes that are relevant to ATC tasks, and the vulnerability of these processes to disruption. This report focuses on developing an understanding of the role working memory plays in air traffic controller performance by emphasizing the constraints, and the factors that may overcome or minimize memory loss of critical ATC information. 229 references are cited in this report. Air Traffic Control (ATC), Memory enhancements, Controller memory, Controller performance, Memory lapses, Working memory.

AN (1) AD-A284 120/XAG

FG (2) 170703
010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) 7110.65H Air Traffic Control.

RD (11) 16 Sep 1993

PG (12) 597 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL TERMINAL AREAS, *AIRCRAFT TRAFFIC, AVIATION SAFETY, TRAFFIC

AB (27) The Air Traffic Rules and Procedures Service has distributed basic editions of FAA Orders 7110.10, 7110.65, 7210.3, and 7930.2, as well as the Pilot/Controller Glossary. These orders are being provided in advance of their normally scheduled dates to ensure for sufficient preparation for the Airspace Reclassification change. The orders and associated briefing guides shall serve as the fundamental training material to meet this preparatory requirement for Airspace

Reclassification

AN (1) AD-A284 878/XAG

**FG (2) 010600
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) FAA Long-Range Aviation Forecasts Fiscal Years 2005-2020.

RD (11) Sep 1993

PG (12) 19 Pages

RS (14) FAA-APO-93-5

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMMERCIAL AVIATION, *MANAGEMENT PLANNING AND CONTROL, *AIR TRAFFIC

CONTROL SYSTEMS

FORECASTING, PRICE INDEX, AIRCRAFT, ECONOMICS, COSTS, MANPOWER, PILOTS, INFLATION(ECONOMICS)

ID (25) Federal aviation administration, Flying hours

AB (27) To assure consistency in agency planning, the Office of Aviation Policy, Plans, and Management Analysis provides an extension of its annual 12-year forecasts of aviation demand. Although forecast values are shown for specific years, it must be recognized that year-to-year fluctuations are difficult to forecast precisely. Therefore, the projections reflect the trend of average conditions expected during the forecast period.

AN (1) AD-A292 065/XAG

**FG (2) 010500
010600
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) FAA Air Traffic Activity. Fiscal Year 1993.

DN (9) Statistical rept. 1 Oct 92-30 Sep 93

AU (10) Trembley, Nancy

RD (11) 30 Sep 1993

PG (12) 286 Pages

RS (14) FAA-APO-110

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRPORT CONTROL TOWERS, *CONTROL CENTERS, *AIR TRAFFIC, *AIR TRAFFIC

CONTROLLERS

STATIONS, AIRCRAFT, FACILITIES, TOWERS, FLIGHT, PERSONNEL, AIRPORTS, TERMINALS

AB (27) This FAA publication furnishes terminal and en route air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations, Approach Control Facilities, and FAA-contracted ATCTs. These reports are used as a guide in determining the need for larger or additional facilities, upgraded equipment at particular facilities, and possible increases in personnel at existing facilities.

AN (1) AD-A269 478/XAG

FG (2) 170702

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) LORAN-C Aviation Monitor (LORMON) Interfaced with VOR Remote Maintenance Monitoring System: Operational Test and Evaluation (OT&E) Integration and OT&E Operational Test Report.

DN (9) Technical note

AU (10) Erikson, Robert
Garufi, Frank

RD (11) Aug 1993

PG (12) 84 Pages

RS (14) DOT/FAA/CT-TN93/21

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *LORAN, *MONITORS

AIR NAVIGATION, APPROACH, ASSEMBLY, CARDS, CENTRAL PROCESSING UNITS,

CIRCUITS, CONTROL, DEPLOYMENT, DOCUMENTS, ELECTRONICS, ENGINEERING,

FACILITIES, FIRMWARE, HIGH FREQUENCY, INTEGRATION, INTERFACES, KITS, MAINTENANCE, MANAGEMENT, MODIFICATION, MODIFICATION KITS,

MONITORING,

NAVIGATION, OMNIDIRECTIONAL, PROCESSING, REQUIREMENTS, SPECIFICATIONS,

TACAN, TEST AND EVALUATION, VERY HIGH FREQUENCY

AB (27) This report addresses the Operational Test and Evaluation (OT&E)

integration and OT&E Operational Testing conducted in support of the Loran-C Aviation Monitor (LORMON). The LORMON was tested with the second generation Very High Frequency Omnidirectional Range (VOR) Remote Maintenance Monitoring System (RMMS). The test suite consisted of the following equipment: LORMON, second generation VOR, Tactical Air Navigation (TACAN), and Remote Monitor and Control Processing Unit Type F (RMC-F). A preproduction Electronic Engineering Modification (EEM) kit was installed in the VOR equipment so that communications with the LORMON would be possible. The modification kit included a wiring harness, and an additional circuit card assembly for the Facilities Central Processing Unit (FCPU) of the VOR. New firmware was installed at both the FCPU and RMC-F. All testing was conducted at the Federal Aviation Administration (FAA) Technical Center. Analysis of the results indicate that the LORMON and modified VOR RMMS did not meet all the requirements of NAS-SS-1000, LORMON specifications, or LORMON interface control document. One item was identified as deployment critical, 22 items were identified as critical, and 20 items were identified as noncritical. Loran-C, Loran-C Aviation Monitor (LORMON), Nonprecision approaches.

AN (1) AD-A269 688/XAG

FG (2) 070200

210200

010300

070400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analytical Method for Water Vapor Collection and Analysis in Aircraft Cabin Fires.

DN (9) Technical note

AU (10) Speitel, Louise

RD (11) Aug 1993

PG (12) 22 Pages

RS (14) DOT/FAA/CT-TN93/33

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT CABINS, *COLLECTION, *WATER VAPOR, *FIRES, ATMOSPHERES, BUTANES, COMBUSTION, DESICCANTS, EFFICIENCY, FLOW, GAIN, ICE, LIGHT, MATERIALS, METHANE, NEEDLES, PACKING MATERIALS, PARTICULATES, PROPANE, SAMPLING, SCALE, SPRAYS, STREAMS, TEMPERATURE,

TEST AND EVALUATION, THERMOGRAVIMETRIC ANALYSIS, TRAPS, TUBES, VALVES, VOLUME, WEIGHT, FILTRATION, GASES, CARBON MONOXIDE, CARBON DIOXIDE, OXYGEN, CALIBRATION

AB (27) A method of collection and analysis was developed to determine the concentrations of water vapor in full-scale aircraft cabin fire tests as a function of time. Specialized collection tubes were developed which selectively trap water vapor. Particulates are filtered out of the sample stream and light fixed gases such as CO, CO₂, O₂, methane, propane, and butane pass through the tube. The gas collection sections of the tubes are surrounded by ice-water to maximize collection efficiency of the desiccant packing material. The percentage of water in the test atmosphere is calculated based on the weight gain of the tube and the volume of sample drawn. The flow is controlled by a calibrated needle valve, downstream of the sampling assembly, held at a constant temperature. The method was validated by analyzing selected components of a sample tube from a full-scale fire test by Thermogravimetric Analysis. Water vapor, Water spray, Aircraft cabin fire tests, Combustion, Analysis, Water vapor analysis.

AN (1) AD-A270 509/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) An Assessment of the Potential for Neck Injury Due to Padding of Aircraft Interior Walls for Head Impact Protection.

DN (9) Final rept.

AU (10) Armenia-Cope, R.

Marcus, J. H.

Gowdy, R. V.

DeWeese, R. L.

RD (11) Aug 1993

PG (12) 14 Pages

RS (14) DOT/FAA/AM-93/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *HEAD(ANATOMY), *WOUNDS AND INJURIES, *AVIATION INJURIES, *NECK(ANATOMY)

AIRCRAFT, AIRCRAFT CABINS, COMPARISON, CRASHES, CRASHWORTHINESS, IMPACT, INSTRUMENTATION, MANAGEMENT, MOMENTS, PROTECTION, REDUCTION,

REQUIREMENTS, RISK, TEST AND EVALUATION, WALLS, MILITARY MEDICINE,
AIR

FORCE PERSONNEL, PILOTS, TOLERANCE

ID (25) *Neck injuries

AB (27) This report describes a short test program to assess the potential for neck injury induced by placing padding on the interior walls of an aircraft cabin to reduce the possibility of a head injury during a crash. Such padding is a possible mechanism of achieving the heightened impact protection requirements adopted by the Federal Aviation Administration in 1988. The report reviews the literature on impact induced neck injury, and reports neck injury criteria developed and reported by others. The type of test device to use with the neck injury criteria is also discussed. Using the reported neck injury criteria, and a Hybrid III test dummy with neck instrumentation, the testing program found that neck injury, with one exception, was not likely in either the tested pad or unpadded case. The one exception was neck extension injuries for which both the unpadded and padded tests exceeded the injury criteria. The tested pad, in comparison to the unpadded case, substantially decreased the neck extension moment, implying a reduction in neck injury risk. Neck injury, Impact protection, Crashworthiness, Padding.

AN (1) AD-A271 777/XAG

FG (2) 010300

131200

130700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Widebody Cabin Water Spray Optimization Tests.

DN (9) Technical note

AU (10) Marker, Timothy R.

RD (11) Aug 1993

PG (12) 47 Pages

RS (14) DOT/FAA/CT-TN93/29

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT CABINS, *OPTIMIZATION, *SPRAYS, *WATER
ACTIVATION, AIRCRAFT FIRES, CEILING, CONFIGURATIONS, CONSTANTS,

FLOW

RATE, FUSELAGES, HEIGHT, NOZZLES, QUANTITY, RATES, REGIONS, SCALE,
SURVIVABILITY, TEMPERATURE, TEST AND EVALUATION, THERMOCOUPLES,

FIRES

ID (25) *Widebody, Full-zone, Half-zone, Restratify, Fractional effective dose

AB (27) Nine full-scale tests were conducted in a modified DC-10 test article as part of an aircraft cabin water spray optimization study. The purpose of the study was to test several spray configurations by varying the orientation of the nozzles, the flow rate, and the quantity of water sprayed, while keeping the fire conditions constant, in an attempt to minimize the amount of water required to effectively suppress a postcrash aircraft fire and improve occupant survivability. The tests were used to validate optimization tests previously conducted in the narrowbody 707 test article. The initial test series employed a full-zone spray system, extending across the width of the fuselage, consisting of 7 zones, each containing 12 nozzles. A thermocouple was centrally mounted at ceiling height in each of the 8 foot long zones, allowing for the activation of a particular zone when the temperature reached a predetermined value. A second series of tests were run in which the original zones were divided in half, producing 5 zones on either side of the fuselage centerline for a total of 10. Each of the 10 zones contained 6 nozzles. The survival time was extended between 41 and 103 seconds, depending on zone configuration, discharge activation temperature, and cabin location. Full-zone, Half-zone, Restratify, Fractional effective dose.

AN (1) AD-A274 096/XAG

FG (2) 250400

010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Airborne Data Link Operational Evaluation Test Plan.

DN (9) Technical note

AU (10) Rehmann, Albert J.
Mogford, R. H.

RD (11) Aug 1993

PG (12) 47 Pages

RS (14) DOT/FAA/CT-TN93/30

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Prepared in collaboration with CTA, Inc., Pleasantville, NJ.

DE (23) *AIR TRAFFIC CONTROLLERS, *DATA LINKS, *FLIGHT CREWS, *VOICE
COMMUNICATIONS

AIRCRAFT, ATTENTION, COCKPITS, CONFIGURATIONS, EFFICIENCY,
ELECTRONICS,

GAIN, HUMANS, MANAGEMENT, MEASUREMENT, PERFORMANCE(HUMAN),
PILOTS,

SIMULATORS, TERMINALS, TIME, WORKLOAD, TEST AND EVALUATION

AB (27) This plan describes an end-to-end study of operational concepts and procedures associated with the introduction of electronic data communications between flight crews and air traffic controllers. Full performance controllers from terminal facilities will interact with type-related line pilots in four cockpit simulators networked into the Federal Aviation Administration Technical Center's Air Traffic Control Laboratory. Measures of human performance will gain insight into flight crew alerting, display, placement, and the utility of voice annunciation of Data Link Messages. Direct measures of workload, communications efficiency, Data Link attention time (measured by head position), and aircraft state will be gathered and translated into recommendations for the cockpit display configuration. Data link, Pilot human factors, Flight crew procedures, Flight crew measurements.

AN (1) AD-A268 226/XAG

FG (2) 010300

060500

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Aviation Accident Risk for Airmen with Aphakia and Artificial Lens Implants.

DN (9) Final rept.

AU (10) Nakagawara, Van B.

Wood, Kathryn J.

RD (11) Jul 1993

PG (12) 16 Pages

RS (14) DOT/FAA/AM-93/11

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *VISION, *SURGICAL IMPLANTATION, *LENS(EYE), *WOUNDS AND INJURIES, *AVIATION MEDICINE

ACCIDENTS, DATA BASES, FREQUENCY, PATHOLOGY, POPULATION, RATES, RECORDS, WAIVER, AVIATION SAFETY, RESPONSE(BIOLOGY), CASE STUDIES

ID (25) Aphakia, Artificial lens implants

AB (27) Airmen with aphakia and intraocular (IOL) implants who, on a case-by-case basis, may obtain a waiver for a medical certificate, have been previously associated with higher aviation accident rates when compared to the total civil airman population. This study analyzes the accident frequencies of these civil airmen for a 4-year period (1982-95). Medical records were evaluated for all certified airmen who carried FAA-specific pathology codes for aphakia and artificial lens

implants during the study period. Aviation accident and active airman population frequencies were obtained from FAA databases. The entire population of aphakia and IOL airmen and those < 50 years of age had significantly higher ($p < .50$) accident rates than the corresponding non-aphakic airman population. Aeromedical certification considerations of the study findings are discussed. Further investigations into additional confounding factors between the aphakic and non-aphakic populations are recommended.... Vision, Aphakia, Lens, Intraocular, Medical certification, Accidents.

AN (1) AD-A268 318/XAG

FG (2) 010500

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) SATORI: Situation Assessment through the Re-creation of Incidents.

DN (9) Final rept.

AU (10) Rodgers, Mark D.

Duke, Duane A.

RD (11) Jul 1993

PG (12) 14 Pages

RS (14) DOT/FAA/AM-93/2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *AIR TRAFFIC CONTROL SYSTEMS, *HUMAN FACTORS

ENGINEERING

ADAPTATION, ADDITION, AIR TRAFFIC, ANALOGS, APPROACH, CONTROL, DATA BASES, DYNAMICS, ERRORS, FACILITIES, INTENSITY, MAPS, OVERLAYS,

RADAR,

RECORDS, SUBROUTINES, SWITCHES, TAPES, TERMINALS, TOOLS, TRAINING, WEATHER, PILOTS

ID (25) SATORI(Situation Assessment Through Recreation of Incidents)

AB (27) A system has been developed that graphically re-creates the radar data recorded at En Route air traffic control (ATC) facilities. Each facility records data sent to the displays associated with the airspace under its control on a System Analysis Report (SAR) tape. SATORI (Situation Assessment Through Re-creation of Incidents) overlays the SAR data on the appropriate sector maps using map data from the Adaptation Control Environmental System (ACES) database. The analog switch display settings of the plan view display (PVD) are not recorded; however, subroutines have been written for SATORI that allow

the display to be set up with the settings reported to have been used by a given controller. In addition, SATORI has the capability to display the high and low weather intensity that was displayed on a given PVD. All software routines written for SATORI use Open Systems Foundation (OSF) technology. Similar data to those available from En Route facilities are recorded at Terminal Radar Approach Control (TRACON) facilities and should allow for the development of a re-creation tool much like the one discussed in this report. Once SATORI is developed and evaluated, it will be possible

AN (1) AD-A268 389/XAG

FG (2) 010200

060400

130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Aviation Accident Risk for Airmen with Aphakia and Artificial Lens Implants.

DN (9) Final rept.

AU (10) Nakagawara, Van B.
Wood, Kathryn J.

RD (11) Jul 1993

PG (12) 14 Pages

RS (14) DOT/FAA/AM-93/11

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ACCIDENTS, *AVIATION ACCIDENTS, *VISION, *WOUNDS AND INJURIES, *VISUAL

DEFECTS

DATA BASES, FREQUENCY, PATHOLOGY, POPULATION, RATES, RECORDS,

WAIVER,

VISUAL SURVEILLANCE, VISUAL PERCEPTION, PILOTS

ID (25) Aphakia, Medical certification

AB (27) Airmen with aphakia and intraocular (IOL) implants who, on a case-by-case basis, may obtain a waiver for a medical certificate, have been previously associated with higher aviation accident rates when compared to the total civil airman population. This study analyzes the accident frequencies of these civil airmen for a 4-year period (1982-95). Medical records were evaluated for all certified airmen who carried FAA-specific pathology codes for aphakia and artificial lens implants during the study period. Aviation accident and active airman population frequencies were obtained from FAA databases. The entire

population of aphakia and IOL airmen and those < 50 years of age had significantly higher ($p < .50$) accident rates than the corresponding non-aphakic airman population. Aeromedical certification considerations of the study findings are discussed. Further investigations into additional confounding factors between the aphakic and non-aphakic populations are recommended.... Vision, Aphakia, Lens, Intraocular, Medical certification, Accidents.

AN (1) AD-A268 390/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) SATORI: Situation Assessment through the Re-creation of Incidents.

DN (9) Final rept.

AU (10) Rodgers, Mark D.
Duke, Duane A.

RD (11) Jul 1993

PG (12) 14 Pages

RS (14) DOT/FAA/AM-93/12

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RADAR TRACKING, *DATA DISPLAYS, *AIR TRAFFIC CONTROLLERS, *FLIGHT RECORDERS

AIR TRAFFIC, ANALOGS, DATA BASES, DYNAMICS, ERRORS, HUMANS, INTENSITY,

MAPS, OVERLAYS, PERFORMANCE(HUMAN), RECORDS, SUBROUTINES, SWITCHES,

TAPES, TERMINALS, TOOLS, WEATHER, HUMAN FACTORS ENGINEERING

ID (25) SATORI(Situation Assessment Thru Recreation of Incidents)

AB (27) A system has been developed that graphically re-creates the radar data recorded at En Route air traffic control (ATC) facilities. Each facility records data sent to the displays associated with the airspace under its control on a System Analysis Report (SAR) tape. SATORI (Situation Assessment Through Re-creation of Incidents) overlays the SAR data on the appropriate sector maps using map data from the Adaptation Control Environmental System (ACES) database. The analog switch display settings of the plan view display (PVD) are not recorded; however, subroutines have been written for SATORI that allow the display to be set up with the settings reported to have been used by a given controller. In addition, SATORI has the capability to display the high and low weather intensity that was displayed on a

given PVD. All software routines written for SATORI use Open Systems Foundation (OSF) technology. Similar data to those available from En Route facilities are recorded at Terminal Radar Approach Control (TRACON) facilities and should allow for the development of a re-creation tool much like the one discussed in this report. Once SATORI is developed and evaluated, it will be possible to accomplish the goals of evaluating system designs, over-the-shoulder appraisals, training outcomes, procedures, airspace design, and measuring controller performance. Not only will the capabilities and features of SATORI provide those interested in air traffic with a valuable tool for assessing the dynamics of the air traffic situation, but additionally, and more importantly, the Agency will be in a better position to bring about effective change in future ATC systems.... Air traffic control, Human factors, Human performance, Training, Operational/system errors.

AN (1) AD-A268 661/XAG
FG (2) 060400
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Head and Face Anthropometry of Adult U.S. Civilians.

DN (9) Final rept.

AU (10) Young, Joseph W.

RD (11) Jul 1993

PG (12) 44 Pages

RS (14) DOT/FAA/AM-93/10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ANATOMY, *ANTHROPOMETRY, *CIVILIAN POPULATION, *HEAD(ANATOMY)
ADULTS, CAUCASIANS, DESIGN CRITERIA, FEMALES, FORMATS, LABELS,

MALES,

MEASUREMENT, POPULATION, PROTECTIVE EQUIPMENT, RATIOS,
STANDARDIZATION,

SURVEYS, FACE(ANATOMY), TABLES(DATA), UNITED STATES, HUMAN BODY,
ANATOMICAL MODELS, SIZES(DIMENSIONS)

ID (25) Head and face anthropometry, Military surveys

AB (27) This report presents a total of 17 traditional and 5 new head and facial dimensions from a random, composite U.S. female and male civilian population measured over a period of 30 years. The 5 new measurements, identified to describe specific anatomical relationships of the face, can have a direct influence on equipment design concepts. The survey population includes 376 (195 females and 172 males) adult

subjects in the age range of 17 through 69 years representing a predominantly high ratio of Caucasian subjects to other ethnic origin subjects. The data summary format is specifically intended for basic design concept use. These dimensions describe essential anatomical characteristics for use as basic design criteria in the development of protective equipment for the head and face. Because of the lack of standardization of anatomical and anthropometrical terminology, a thesaurus of selected anatomical and anthropometrical terms, specific to descriptive labels used in this report, is provided as a cross reference for anthropometrical dimensions. Anatomy, Anthropometry, Anatomical Characteristics, Head and face anthropometry.

AN (1) AD-A269 476/XAG

FG (2) 010100
010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) VMC Left Turn Curved Approaches, Test Results.

DN (9) Technical note Sep 89-Jul 90

AU (10) Weiss, Rosanne M.

RD (11) Jul 1993

PG (12) 45 Pages

RS (14) DOT/FAA/CT-TN92/46

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *APPROACH, *TURNING(MANEUVERING), *CURVED PROFILES
ANGLES, CIRCULAR, DIVISION, DOCUMENTS, FEET, FLIGHT TESTING, GROUND
BASED, HELIPORTS, INPUT, MANAGEMENT, MANEUVERS, METHODOLOGY,
MODIFICATION, PILOTS, SURFACES, TEST AND EVALUATION, TIME, TRACKING,
HELICOPTERS, METEOROLOGICAL DATA

AB (27) Flight tests were conducted at the Federal Aviation Administration (FAA) technical Center in 1989 and 1990 to aid in answering questions concerning curved approaches to a heliport under visual meteorological conditions (VMC). These questions include protected airspace within the curved segment of the approach, the most feasible angle of turn and minimum final approach segment. The FAA's Sikorsky S-76 and UH-1H were used for these tests. Data were collected from approaches using turn angles of 45-, 90-, and 180-degrees, each with three different final segments, 800, 1200, and 1600 feet (ft). Due to airspace restrictions at the time of these tests, left turns to final were flown. All maneuvers were tracked by ground-based tracking systems. This report documents the results of these flights. The test procedures, evaluation methodology, and technical and operational issues are described.

Analysis of pilot performance as well as pilot subjective input are provided. Conclusions are presented that address the airspace, turn angle, and final segment issues. The results will be considered in future modifications of the FAA Heliport Design Advisory Circular, AC 150/5390-2. All appendixes can be found in Research Directorate for Aviation Technology Division Report DOT/FAA/CT-ACD33093/6, Appendixes for TN92/46 VMC Left Turn Curved Approaches, Test Results. Curved approaches, Approach surface, Final approach segment, Heliport, VMC.

AN (1) AD-A269 855/XAG

FG (2) 010500

040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) Terminal Area Forecasts, FY 1993-2005.

RD (11) Jul 1993

PG (12) 583 Pages

RS (14) FAA-APO-93-9

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FORECASTING, *AIR TRAFFIC CONTROL TERMINAL AREAS

AIR TRAFFIC, AIRCRAFT, AIRPORTS, BUDGETS, CONTRACTS, CONTROL, INDUSTRIES, OPERATION, PLANNING, RADAR, TERMINALS, TOWERS, TRAFFIC, UNITED STATES

AB (27) This report contains forecasts of aviation activity of 873 airports in the United States for fiscal years 1993-2005. These include 401 airports with FAA air traffic control towers and radar approach control services and 27 FAA contract towers. For each airport, detailed forecasts are made for the four major users of the air traffic system: air carriers, air taxi/commuters, general aviation, and military. Summary tables contain national, FAA regional, and State aviation data and other airport specific-highlights. The forecasts have been prepared to meet the budget and planning needs of the FAA and to provide airport-specific information that can be used by State and local aviation authorities, the aviation industry, and the general public. Airport forecasts, Aviation activity, Terminal area forecasts, Aircraft operations, Air carrier, Commuter, Air taxi, General aviation, Military aviation.

AN (1) AD-A271 596/XAG

FG (2) 240100

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT

AND ENER G Y

TI (6) EDMS Microcomputer Pollution Model for Civilian Airports and Air Forces Bases: User's Guide Supplement A .

AU (10) Segal, H. M.

RD (11) Jul 1993

PG (12) 28 Pages

RS (14) DOT/FAA/EE-91-3-SUPP-A

RN (18) AFESC/ESL-TR-91-31-SUPP-A

XC-AFESC/ESL

RC (20) Unclassified report

NO (21) Supplement A to AD-A240 528.

DE (23) *ENVIRONMENTAL MANAGEMENT, *EMISSION CONTROL

ACCESS, ADDITION, AIR, AIR POLLUTION, AIRCRAFT, AIRPORTS, ALGORITHMS, CONDENSATION, CONFORMITY, DATA BASES, DISPERSIONS, DOCUMENTS, EMISSION,

EXPANSION, FACILITIES, GROUND SUPPORT, GROUND SUPPORT EQUIPMENT, INVENTORY, MENU, MICROCOMPUTERS, MOBILE, MODELS, MOTORS, OUTPUT, POLLUTANTS, POLLUTION, SPRAYS, TIME, VEHICLES, AIR FORCE FACILITIES, TERMINAL FLIGHT FACILITIES, MODELS, USER MANUALS

ID (25) *EDMS(Emissions and Dispersion Modelling System)

AB (27) This supplement announces the incorporation of the latest aircraft emission database (EPA, 1992) and the latest motor vehicle database (Mobile 5a) into the Emissions and Dispersion Modeling System (EDMS). (The Clean Air Act Amendments of 1990 requires that the latest emission information be used to establish the Conformity of an airport improvement project with the State Implementation Plan.) This supplement also documents the following model enhancements: (1) an expansion of the emissions inventory portion of the model to accommodate ground support equipment and airport spray painting facilities; (2) the condensation of the emissions report into a one page printout; (3) the summarizing of calculated concentrations into hourly average time periods associated with each pollutant; (4) the access of the dispersion output file (disperse.out) directly from the menu; (5) the addition of a gridding algorithm designed to permit the entry of up to 200 receptors into the model; (6) the expansion of the example problem procedure to accommodate gridding. Pollution, Air pollution, Dispersion model, Emissions model, Data base, Microcomputer

AN (1) AD-A266 302/XAG

FG (2) 250200

170700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Time Delay Measurements of Current Primary FAA Air/Ground Transmitters and Receivers.

DN (9) Technical note

AU (10) Petro, John
Randazzo, Philip

RD (11) Jun 1993

PG (12) 26 Pages

RS (14) DOT/FAA/CT-TN93/14

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RADIO TRANSMITTERS, *RADIO RECEIVERS, *AIR NAVIGATION TIME DELAY RELAYS, AIR TO SURFACE, AIRCRAFT, VERY HIGH FREQUENCY, COMMUNICATION AND RADIO SYSTEMS, TEST AND EVALUATION

AB (27) This report details the results of tests performed by ACW-300B, Spectrum Engineering Group, in determining the amount of time delay present in various air/ground communications equipment. This test was comprised of an Federal Aviation Administrative (FAA) Air Navigation Ground Radio Transmitter (AN-GRT-21) and an FAA Air Navigation Ground Radio Receiver (AN-GRR-23): two aircraft transceivers, a King KTR-905 very high frequency (VHF) transceiver, and a Collins VHF-251 Technical Standard Order (TSO) transceiver.

AN (1) AD-A267 175/XAG

FG (2) 170900
040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Next Generation Weather Radar (NEXRAD) Principal User Processor (PUP) operational Test and Evaluation (OT&E) Operational Test Plan.

DN (9) Technical rept.

AU (10) Stretcher, Baxter R.

RD (11) Jun 1993

PG (12) 13 Pages

RS (14) DOT/FAA/CT-TN93/22

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR, *TEST AND EVALUATION, *OPERATIONAL EFFECTIVENESS

AIR TRAFFIC, APPROACH, CONTROL, RADAR, PERFORMANCE(ENGINEERING), HAZARDS, S BAND, DOPPLER RADAR, WIND SHEAR

AB (27) The purpose of this plan is to describe and detail the procedural approach, method, and responsibilities to be employed in conducting the Operational Test and Evaluation (OT&E) on the Next Generation Weather Radar (NEXRAD) principal User Processor (PUP) system. The testing of the NEXRAD PUP will determine the operational suitability and effectiveness of the NEXRAD PUP aviation weather products used by the Center Weather Service Unit (CWSU) meteorologists for air traffic control (ATC)... Principal User Processor (PUP), Next Generation Weather Radar (NEXRAD), Center Weather Service Unit (CWSU), Meteorologists.

AN (1) AD-A267 708/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) U.S. Civil Airmen Statistics Calendar Year 1992.

RD (11) Jun 1993

PG (12) 156 Pages

RS (14) FAA-APO-93-6

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION

PILOTS, GLIDERS, HELICOPTERS, STATISTICAL ANALYSIS

ID (25) FAA-APO-93-6, Certificates held, Nonpilot, Student pilots, Airline transport, Instrument rating, Flight instructions, Pilot certificates issued

AB (27) This report contains calendar year statistics on pilots and nonpilots and the number of certificates issued. It also contains count of pilots and nonpilots by state and county.

AN (1) AD-A268 971/XAG

FG (2) 120700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Connectivity Alternatives for Remote Users of the Maintenance Processor Subsystem (MPS). Addendum-1.

DN (9) Final rept. Apr-Aug 92

AU (10) Steelman, Dennis
Smith, Otto

Shallenberger, Kurt

RD (11) Jun 1993

PG (12) 179 Pages
RS (14) DOT/FAA/CT-90/16-ADD-1
CT (15) DTFA03-86-C-0018
RN (18) XJ-XD
RC (20) Unclassified report
DE (23) *REMOTE TERMINALS, *COMPUTER COMMUNICATIONS, *DATA LINKS CONFIGURATIONS, CYCLES, DATA RATE, LIFE CYCLE COSTS, MAINTENANCE, MANAGEMENT, QUANTITY, RATES, SAVINGS, COMPUTER ARCHITECTURE, USER NEEDS
ID (25) MPS(Maintenance Processor Subsystem)
AB (27) A significant savings in the life cycle cost of providing connectivity to remote users of the Maintenance Processor Subsystem (MPS) has been shown to be technically feasible. Previous studies indicated a potential savings in excess of \$900,000 by using an X.25/RS-232 communications architecture to link the MPS through the Data Multiplexer Network (DMN) to Maintenance Data Terminals (MDT). This report presents the results of testing an X.25/V.35 communications architecture. This architecture is superior in terms of cost savings, maximum data rates, and reduced quantity of X.25 links required. This report also recommends a speed configuration for the different communications links involved. with this architecture. These are the results of testing conducted by the Advanced Systems Technology Branch (ACD-350) at the Federal Aviation Administration (FAA) Technical Center.... Data multiplexer network, Paradyne, RMMS, Maintenance data terminal

AN (1) AD-A270 032/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Vertical Drop Test of a Metro III Aircraft.
DN (9) Final rept. Apr 91-Apr 92
AU (10) McGuire, Robert J.
Nissley, William J.
Newcomb, James E.
RD (11) Jun 1993
PG (12) 80 Pages
RS (14) DOT/FAA/CT-93/1
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *CRASHWORTHINESS, *DROP TESTS, *IMPACT TESTS ACCELERATION, AIRCRAFT, AIRFRAMES, AIRPORTS, ASSEMBLY, CONFIGURATIONS,

CRASHES, DEFLECTION, FEET, FLOORS, FUELS, FUSELAGES, GRAVITY, INSTRUMENTATION, INTERNATIONAL AIRPORTS, MANAGEMENT, RESPONSE, SEATS,
STANDARDS, STRUCTURAL RESPONSE, TAKEOFF, TEST AND EVALUATION, URBAN
AREAS, VELOCITY, WEIGHT
AB (27) A commuter category Fairchild Metro III fuselage and wingbox assembly was subjected to a vertical impact test at the Federal Aviation Administration (FAA) Technical Center, Atlantic City International Airport, NJ. The purpose of the test was to measure the structural response of the fuselage, floor, cabin furnishing (including standard and modified seats) and anthropomorphic dummies. The test was conducted to simulate the potentially survivable impact conditions of an actual crash. The airframe was dropped from 11.2 feet and impacted at a velocity of 26.32 feet per second (ft/sec) . The test weight simulated an airplane configuration that was approximately 1,450 pounds less than the maximum zero fuel weight (13,100 pounds) of the airplane with a 14,100-pound maximum takeoff weight. Acceleration, load and deflection data were collected throughout the test. Instrumentation were located on the fuselage, floor, seats, and within the anthropomorphic test dummies. The vertical impact test resulted in peak accelerations of gravity (g) ranging from 40g to 60g throughout the airframe. Airplane vertical impact, Drop test, Crashworthiness, Commuter airplane.

AN (1) AD-B196 917/XAG
FG (2) 010305
120500
010600
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Evaluation of Inblast in the Commercial Aircraft Environment.
DN (9) Final rept.
AU (10) Gatto, Joseph
Fleisher, Howard
RD (11) Jun 1993
PG (12) 50 Pages
RS (14) DOT/FAA/CT-93/13
CT (15) DTFA03-89-C-00043
RN (18) XG-XD
RC (20) Unclassified report
AL (22) Distribution authorized to U.S. Gov't. agencies only. Other requests shall be referred to US Dept. of Transportation, Federal Aviation Administration, Office of Civil Aviation Security, Washington, DC

20590.
DE (23) *COMPUTER PROGRAMMING, *BLAST LOADS
MATHEMATICAL MODELS, ALGORITHMS, SOFTWARE ENGINEERING, DATA
PROCESSING,
COMPUTATIONS, PARAMETRIC ANALYSIS, COMMERCIAL AIRCRAFT,
STRUCTURAL
ANALYSIS, SHOCK WAVES, VULNERABILITY, EXPLOSIONS, REFLECTION,
CARGO,
CIVIL AVIATION, TRANSPORT AIRCRAFT, PRESSURE DISTRIBUTION, VENTING
ID (25) INBLAST COMPUTER PROGRAM
DL (33) 13

AN (1) AD-A265 068/XAG

FG (2) 090100

250200

120700

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC
CITY NJ**

**TI (6) The Data Multiplexing Network (DMN) Phase 3 Extended Distance Data
Cable (EDDC) Test and Evaluation.**

DN (9) Technical note

AU (10) Bell, Wayne E.

Hoang, Phillip P.

Lind, Edward N.

RD (11) May 1993

PG (12) 118 Pages

RS (14) DOT/FAA/CT-TN93/11

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ELECTRIC CABLES, *COMPUTER NETWORKS, *LENGTH, *MULTIPLEXING,
*NETWORK

ANALYSIS(MANAGEMENT)

TEST AND EVALUATION, COMMERCIAL EQUIPMENT, OFF THE SHELF

EQUIPMENT,

INSTALLATION, LABORATORY TESTS

ID (25) DMN(Data Multiplexing Networks), EDDC(Extended Distance Data Cable),

Low loss cable, Octopus cable, NAS(National Airspace System), BER(Bit
Error Rate)

AB (27) This test report contains the results of the Extended Distance Data
Cable (EDDC) Test and Evaluation of the Data Multiplexing Network (DMN)
Phase IIIB Commercial Off-The-Shelf (COTS) equipment. The test was
accomplished at the Federal Aviation Administration (FAA) Technical
Center. The test results determined the maximum cable length of low

loss cable and octopus cable which can be installed with the DMN Phase
IIIB COTS equipment. ASM-300 will prepare the Networks Engineering
Drawing and Cable Management for the first Operational Readiness
Demonstration(ORD) site, Minneapolis Air Route Traffic Control Center
(ARTCC), based on the results of this test

AN (1) AD-A265 924/XAG

FG (2) 010200

010600

060500

061000

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

**TI (6) Variations in Time-To-Incapacitation and Blood Cyanide Values for Rats
Exposed to Two Hydrogen Cyanide Gas Concentrations.**

DN (9) Final rept.

AU (10) Chaturvedi, Arvind K.

Endecott, Boyd R.

Ritter, Roxane M.

Sanders, Donald C.

RD (11) May 1993

PG (12) 20 Pages

RS (14) DOT/FAA/AM-93/8

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *RESPIRATION, *HYDROGEN CYANIDE, *COMBUSTION
PRODUCTS, *AIRCRAFT FIRES

LABORATORY ANIMALS, RATS, IN VIVO ANALYSIS, INCAPACITATING AGENTS,

INFLIGHT, EVACUATION, TIME, BLOOD GASES, COMMERCIAL AVIATION, ARMY

AVIATION, NAVAL AVIATION, AIR FORCE OPERATIONS, CIVIL AVIATION,

AVIATION ACCIDENTS, AVIATION INJURIES, PASSENGERS

ID (25) Federal Aviation Administration

AB (27) It has been suggested that protective breathing devices protect
aircraft passengers from combustion products for 5 min during
evacuation and for 35 min during in-flight-plus-evacuation. Hydrogen
cyanide (HCN), a combustion gas, produces incapacitation at relatively
low concentrations, and time-to-incapacitation (ti) is an applicable
index for predicting escape from a fire. Variations in ti and blood
cyanide (CN value) at specific HCN gas exposure concentrations have not
been evaluated. Therefore, ti and blood CN value at ti for two HCN
concentration that produce 5- and 35- min ti were determined in male
Sprague-Dawley rats. Blood CN value levels as a function of HCN

exposure time were measured. Animals were individually exposed to HCN gas in a chamber equipped with a rotating cage, and ti recorded as the time from insertion of the animal into the cage until it could no longer walk. At incapacitation and at selected intervals prior to ti, rats were quickly removed from the cage and killed for blood collection and CN value quantitation. Chamber HC concentrations were monitored during the exposures

AN (1) AD-A266 032/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Accident Proneness: A Research Review.

DN (9) Final rept.

AU (10) Rodgers, Mark D.
Blanchard, Robert E.

RD (11) May 1993

PG (12) 6 Pages

RS (14) DOT/FAA/AM-93/9

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ACCIDENTS, *PERSONALITY, *PSYCHOLOGY
PREDICTIONS, LITERATURE SURVEYS, PERCEPTION, PERSONNEL SELECTION,
PERCEPTION(PSYCHOLOGY)

ID (25) Accident proneness

AB (27) Accident proneness is a concept that refers to an enduring or stable personality characteristic that predisposes an individual toward having accidents. The concept is controversial and has sustained a lively debate in the literature over the past 75 years. For the most part, though, continual interest has been fueled by poor experimental procedures, misinterpretation of previously reported results, the need to assign blame to individuals, and a rather curious doggedness in attempting to establish a relationship between accidents and personality traits, despite the lack of supporting scientific evidence. This paper reports the origins of the notion of accident proneness and reviews the studies that purport to support or refute it.... Accident proneness, Personality traits, Accidents, Prediction, Literature critiques

AN (1) AD-A266 109/XAG

FG (2) 061000

060500

060100

240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Variations of Time-to-Incapacitation and Carboxyhemoglobin Values in Rats Exposed to Two Carbon Monoxide Concentrations.

DN (9) Final rept.

AU (10) Sanders, Donald C.

Endecott, Boyd R.

Ritter, Roxane M.

Chaturvedi, Arvind K.

RD (11) May 1993

PG (12) 19 Pages

RS (14) DOT/FAA/AM-93/7

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TOXICOLOGY, *CARBON MONOXIDE
AIRCRAFT FIRES, SNAKES, INHALATION, RATS, LABORATORY ANIMALS,
DIAGRAMS,
TABLES(DATA)

ID (25) Federal Aviation Administration, Carboxyhemoglobin, Incapacitation, Combustion gas/carbon monoxide, Time to incapacitation, Carbon monoxide take up, Animal exposure system

AB (27) It has been suggested that passenger protective breathing equipment protect aircraft passengers from smoke for 5 min during an evacuation phase and for 35 min during an in-flight-plus-evacuation phase. Carbon monoxide (CO) is one of the most abundant smoke components and is the major threat in most fire atmospheres. Time-to-incapacitation (ti) is an end-point related to escape from a fire, and variations in ti measurements at specific CO concentrations have not been statistically documented. Therefore, variance in ti at two CO concentrations that produce 5- and 35-min ti in rats were determined; blood carboxyhemoglobin (COHb) saturation at ti was measured. Fifty male Sprague-Dawley rats were individually exposed to each CO concentration in a chamber equipped with a rotating cage, and it was recorded as the time from insertion of the animal into the cage until it could no longer walk. In another set of experiments, blood COHb saturation was determined in rats exposed to these CO concentrations at stepwise intervals less than ti. At incapacitation and at the end of each exposure interval, rats were quickly removed from the cage and killed for blood collection and COHb quantitation. The significant difference in the two COHb levels and the approach of COHb to a maximal level

before incapacitation suggest that blood COHb saturation levels may not necessarily be indicative of the onset of incapacitation

AN (1) AD-A266 303/XAG

FG (2) 250200
010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Satellite Communications Installation Plan.

DN (9) Technical note

AU (10) Meeks, Howard

RD (11) May 1993

PG (12) 21 Pages

RS (14) DOT/FAA/CT-TN93/1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *SATELLITE COMMUNICATIONS, *AIRCRAFT ANTENNAS, *INSTALLATION AVIONICS, MAINTENANCE, RADIOFREQUENCY, WIRING DIAGRAMS, GAIN, DATA STORAGE SYSTEMS, COMPUTERS, TAPE RECORDERS

ID (25) Boeing 727 aircraft

AB (27) The installation plan describes the correct installation procedures for installing low rate Satellite Communications (SATCOM) equipment in a Federal Aviation Administration (FAA) Boeing 727 aircraft. The equipment includes an antenna, satellite communication avionics, a data collection computer, and a tape recorder

AN (1) AD-A266 337/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Variations of Time-to-Incapacitation and Carboxyhemoglobin Values in Rats Exposed to Two Carbon Monoxide Concentrations.

DN (9) Final rept.

AU (10) Sanders, Donald C.

Endecott, Boyd R.

Ritter, Roxane M.

Chaturvedi, Arvind K.

RD (11) May 1993

PG (12) 19 Pages

RS (14) DOT/FAA/AM-93/7

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CARBON MONOXIDE, *INHALATION, *TOXICITY HEMOGLOBIN, EXPOSURE(PHYSIOLOGY), INCAPACITATION, RESPIRATORS, PROTECTIVE MASKS, AIRCRAFT EQUIPMENT, SMOKE, CONCENTRATION(COMPOSITION), BLOOD, COMBUSTION

ID (25) Carboxyhemoglobin

AB (27) It has been suggested that passenger protective breathing equipment protect aircraft passengers from smoke for 5 min during an evacuation phase and for 35 min during an in-flight-plus-evacuation phase. Carbon monoxide (CO) is one of the most abundant smoke components and is the major threat in most fire atmospheres. Time-to-incapacitation ($t_{sub i}$) is an end-point related to escape from a fire, and variations in $t_{sub i}$ measurements at specific CO concentrations have not been statistically documented. Therefore, variance in $t_{sub i}$ at two CO concentrations that produce 5- and 35-min $t_{sub i}$ in rats were determined; blood carboxyhemoglobin (COHb) saturation at $t_{sub i}$ was measured. Fifty male Sprague-Dawley rats were individually exposed to each CO concentration in a chamber equipped with a rotating cage, and $t_{sub i}$ was recorded as the time from insertion of the animal into the cage until it could no longer walk. In another set of experiments, blood COHb saturation was determined in rats exposed to these CO concentrations at stepwise intervals less than $t_{sub i}$. At incapacitation and at the end of each exposure interval, rats were quickly removed from the cage and killed for blood collection and COHb quantitation. Values (mean + or - SD) for measured parameters were: For the 5-min $t_{sub i}$ study, CO = 5706 + or - 178 ppm, $t_{sub i}$ = 5.0 + or - 0.36 min, and COHb = 80.8 + or - 1.3%; for the 35-min $t_{sub i}$ study, CO = 1902 + or - 33 ppm, $t_{sub i}$ = 34.8 + or - 6.8 min, and COHb = 71.2 + or - 1.0% COHb levels tended to plateau prior to incapacitation. Coefficients of variation for $t_{sub i}$ were 7.2% and 19.5% for the 5- and 35-min study, respectively.

AN (1) AD-A263 665/XAG

FG (2) 010500
170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Runway Visual Range (RVR) Operational Test and Evaluation (OT&E) integration and OT&E Operational Test Report.

DN (9) Technical note

AU (10) Benner, William E.

Carty, Thomas C.

Goslin, Joseph J.

Ware, Bruce E.

RD (11) Apr 1993

PG (12) 83 Pages

RS (14) DOT/FAA/CT-TN-92/37

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *RUNWAYS, *AIR TRAFFIC CONTROL TERMINAL AREAS

ACCURACY, AIRPORTS, COMPUTERS, CONTROL CENTERS, CORRECTIONS, DEPLOYMENT, ENVIRONMENTS, FAILURE, INTEGRATION, INTERFACES, INTERNATIONAL, KANSAS, MAINTENANCE, MODIFICATION, OBSERVATION, OPERATIONAL EFFECTIVENESS, PERSONNEL, PROCESSING, REQUIREMENTS,

SAFETY,

SURFACES, TERMINALS, TEST AND EVALUATION, TOWERS, URBAN AREAS, VISIBILITY

ID (25) RVR(Runway Visual Range)

AB (27) The Operational Test and Evaluation (OT and E) Integration and OT and E

operational testing of the Runway Visual Range (RVR) was conducted at the Kansas City International (MCI) Airport Traffic Control Tower (ATCT) in Kansas City, MO, and at the Kansas City (ZKC) Air Route Traffic Control Center (ARTCC) in Olathe, KA. The purpose of this test was to verify National Airspace System (NAS) integration requirements of the subsystems and the operational effectiveness of the RVR within the NAS environment. This report addresses the results of OT and E testing and the results of integration and operational testing of the RVR Maintenance Data Terminal (MDT) and RVR/ Maintenance Processing System (MPS) interface requirements. Testing of the Tower Control Computer Complex (TCCC) and the Automated Surface Observation System (ASOS) NAS subsystems was deferred. It was concluded that the New Generation RVR requires corrections and/or modifications to satisfactorily meet integration and operational requirements. The New Generation RVR should not be deployed until the deployment-critical issues detailed in this report are resolved and successfully retested.

The principal concerns pertain to (1) personnel safety, (2) product integrity during an equipment failure, and (3) accuracy of the visibility product. It is further recommended that all regression testing take place using the RVR and MPS operational baseline software.... Runway Visual Range (RVR), Maintenance Processing System (MPS), Operational Test and Evaluation (OT and E), National Airspace System (NAS).

AN (1) AD-A264 699/XAG

FG (2) 050900

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Contribution of Personality to the Prediction of Success in Initial Air Traffic Control Specialist Training

AU (10) Schroeder, David J.

Broach, Dana

Young, Willie C.

RD (11) Apr 1993

PG (12) 32 Pages

RS (14) DOT/FAA/AM-93/4

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *JOB TRAINING, *SPECIALISTS

APTITUDES, COGNITION, CONTROL, CORRELATION, EQUATIONS, INVENTORY, JOBS,

MODELS, MOUNTS, PERSONALITY, PERSONNEL SELECTION, PREDICTIONS,

SCALE,

STUDENTS, TIME, TRAINING, VARIABLES, WOMEN

AB (27) Reviews have consistently concluded that the validity of personality as

a predictor of job performance is low. However, Barrick and Mount's (1991) meta-analysis of studies of personality and job performance demonstrated the utility of the Big Five model of personality in personnel selection and training. This study was designed to evaluate the utility of personality in predicting student success in the FAA's Air Traffic Control Specialist (ATCS) Nonradar Screen Program (the Screen). The Screen follows the miniature training, testing, and evaluation paradigm, in which individuals with no prior knowledge of the occupation are taught critical aspects of the job and then assessed on a pass/fail basis for their potential to succeed as controllers. The NEO Personality Inventory was administered to 723 men and 307 women at entry into the 9-week Screen. NEO-PI scale scores and cognitive aptitude measures were used to predict final composite scores (COMP) of students. Men and women air traffic students exhibited lower average scores in Neuroticism, higher average scores in Extroversion, Openness to Experience, and Conscientiousness, and no difference on Agreeableness when compared to normative samples. Correlations between the personality scales and COMP were low for both sexes, ranging from .000 with Impulsiveness, a facet of Neuroticism, to -.148 with Excitement-seeking, a facet of the Extraversion dimension. Despite the low zero-order correlations, several of the personality facets proved useful in a regression equation, explaining an additional 3% of variance in performance over that explained by cognitive aptitude measures.... Neuroticism, Extroversion, Openness, Agreeableness,

Conscientiousness, Personality, Air Traffic Control Specialist, Screen, Domain, Facet.

AN (1) AD-A265 362/XAG

**FG (2) 230400
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE**

TI (6) Comparison of Portable Crewmember Protective Breathing Equipment (CPBE) designs

**AU (10) Wilcox, Bruce, Jr.
McLean, Garnet
England, Harvey, Jr**

RD (11) Apr 1993

PG (12) 12 Pages

RS (14) DOT/FAA/AM-93/6

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *OXYGEN, *RESPIRATION, *BREATHING APPARATUS, *EXHALATION, *INHALATION

AIRCRAFT, ALTITUDE, CARBON DIOXIDE, CHLORATES, COMPARISON, DISCRIMINATION, MOISTURE, POTASSIUM, STANDARDS, SUPEROXIDES, TEMPERATURE, TEST AND EVALUATION, WEIGHT, CREWS, MILITARY

PERSONNEL,

MILITARY OPERATIONS, CONCENTRATION(COMPOSITION), PERFORMANCE

TESTS,

PORTABLE EQUIPMENT, PRESSURE, SEALS(STOPPERS), AIR RESISTANCE

ID (25) Crewmember Protective Breathing Equipment(CPBE), CPBE(Crewmember Protective Breathing Equipment)

AB (27) CPBE presently certified for transport category aircraft employ 3 types of oxygen production systems: chlorate candle, potassium superoxide, and compressed oxygen. CPBE performance was evaluated to expose significant differences based on this distinction. CPBE tests employing humans were conducted in accordance with FAA Technical Standard Order C-116. All CPBE were tested for oxygen production, carbon dioxide concentration, internal temperature, moisture, and breathing resistance for 15 minutes at ground level (1,300 ft) and cabin altitude (8,000 ft), while subjects exercised. All CPBE produced a mean oxygen level of at least 59% and maintained carbon dioxide level below 5% at ground level. Differences in internal temperature and humidity were found. Performance at altitude generally paralleled these findings. Oxygen and carbon dioxide levels provide little discrimination about the relative

merits of particular CPBE. However, differences in the wearability of CPBE, based on internal temperature, humidity, and weight, were dependent on the type of CPBE oxygen production system.

AN (1) AD-A267 676/XAG

**FG (2) 010500
010309**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Results of DATAS Investigation of ATCRBS Environment at the Los Angeles International Airport.

DN (9) Final rept. 14 Dec 92-15 Jan 93

**AU (10) Wapelhorst, Leo
Pagano, Thomas
Van Dongen, John**

RD (11) Apr 1993

PG (12) 37 Pages

RS (14) DOT/FAA/CT-93/6

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *COLLISION AVOIDANCE, *DATA LINKS, *INTERNATIONAL AIRPORTS AIRPORTS, DEPLOYMENT, DOWNLINKS, MANAGEMENT, MONITORS, TEST AND EVALUATION, TRAFFIC

ID (25) DATAS(Data Link Test and Analysis System), TCAS(Traffic Alert and Collision Avoidance System), Los Angeles International Airport, Mode S Code

AB (27) This report documents the deployment of the Data Link Test and Analysis System (DATAS) as a Traffic Alert and Collision Avoidance System (TCAS) monitor at the Los Angeles International Airport (LAX). The purpose was to identify aircraft which were reporting illegal Mode S ID's. Data were also taken on the downlink portion of the environment in order to characterize the environment after the implementation of TCAS. The project was conducted by the Airborne Collision and Data Link Systems branch of the Federal Aviation Administration (FAA) Technical Center.... DATAS, TCAS, ATCRBS, Mode S ID's, Los Angeles International Airport.

AN (1) AD-A269 343/XAG

FG (2) 230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The FAA Technical Center Human Factors Laboratory Information Guide.

DN (9) Technical note
AU (10) Lasewicz, Vincent J., Jr
Smolensky, Mark W.
RD (11) Apr 1993
PG (12) 16 Pages
RS (14) DOT/FAA/CT-TN93/15
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *PERFORMANCE(HUMAN), *HUMAN FACTORS ENGINEERING
BACKGROUND, COLLECTION, DATA REDUCTION, DEPTH, FACILITIES,
LABORATORIES, MEASUREMENT, ORGANIZATIONS, REDUCTION, SAMPLING,
SIMULATION, STATE OF THE ART
AB (27) This information guide provides an overview of the capabilities of the
FAA Technical Center's Human Factors Laboratory (HFL) and how those
capabilities are being used to support research critical to the
development and implementation of the National Airspace System (NAS).
The HFL was officially opened and dedicated on November 2, 1992. This
unique state-of-the-art facility is the only one of its kind in the
FAA. It is important that the information about this facility is made
available not only to FAA organizations, but academic and private
sector organizations as well. This information guide specifically
provides the reader with background on why the facility was developed,
an in-depth overview of it's unique design capabilities, a description
of the type of work the HFL will be engaged in, and a representative
sampling of the directions and goals of the HFL. Human Performance
Measurement, Rapid Prototyping, Simulation Data Collection, Data
Reduction, Data Analysis

AN (1) AD-A285 132/XAG

FG (2) 050100

150500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) FAA Acquisition Guide for Program Managers, 1993.

AU (10) Ward, K. H.

RD (11) Apr 1993

PG (12) 183 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *GOVERNMENT PROCUREMENT, *PLANNING PROGRAMMING BUDGETING
COMMERCIAL AVIATION, STANDARDS, LESSONS LEARNED, HUMAN FACTORS
ENGINEERING, COMMERCIAL EQUIPMENT, OFF THE SHELF EQUIPMENT,
PRODUCTION

ENGINEERING, CONFIGURATION MANAGEMENT, COMPUTER PROGRAM
DOCUMENTATION,

SPECIFICATIONS, TEST AND EVALUATION, QUALITY ASSURANCE

ID (25) FAA(Federal Aviation Administration), Department of Transportation,
TAM(Transportation Acquisition Manual), NAS(National Airspace System)

AB (27) The FAA Program Manager's Guide summarizes current information on the
acquisition process applicable to many FAA acquisition process
described in Department of Transportation (DOT) Acquisition Manual
(TAM) Chapter 34, Appendix A, Major Acquisition Policy and Procedures
and Federal Aviation Administration Order 1810.1, Acquisition Policy.
Although the Program Manager's Guide deals primarily with National
Airspace System (NAS) programs, programs providing systems, equipment,
or services that are not part of the NAS may use the guide. The Program
Manager's Guide does not change or replace existing notices, orders, or
other directives and does not include every topic or document a program
manager may need to consider. The Guide does not change agency policy
or supersede any regulations or law

AN (1) AD-A263 172/XAG

FG (2) 120700

010400

**CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC
CITY NJ**

**TI (6) Data Multiplexing Network (DMN) Equipment Operational Test and
Evaluation (OT and E) Integration Test Report.**

DN (9) Test rept.

AU (10) Bell, Wayne E.

Hoang, Phillip P.

RD (11) Mar 1993

PG (12) 26 Pages

RS (14) DOT/FAA/CT-TN9

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *MULTIPLEXING, *OFF THE SHELF EQUIPMENT, *AIR TRAFFIC CONTROL
SYSTEMS,

*COMPUTER NETWORKS

DIVISION, ENVIRONMENTS, INTEGRATION, MANAGEMENT, MINNESOTA,
MONITORING,

PHASE, TEST AND EVALUATION, TIME, TIME DIVISION MULTIPLEXING,
COMMERCIAL EQUIPMENT

ID (25) Data multiplexing network, Deterministic time division multiplexing,
Codex modem, Codex 9800 Network monitoring system

AB (27) This test report contains the test results of the Operational Test and

Evaluation (OT and E) Integration testing of Data Multiplexing Network (DMN) Phase IIIB Commercial Off-The-Shelf (COTS) equipment. The OT and E integration testing was accomplished by conducting unit level tests at the Federal Aviation Administration (FAA) Technical Center, and integration tests at the Air Route Traffic Control Center (ARTCC) in Minneapolis, Minnesota. Based on the test results, it is concluded that the Motorola Codex COTS equipment performed its function of providing data exchange between NAS facilities and is considered qualified for the NAS environment.

AN (1) AD-A263 561/XAG

**FG (2) 040200
170900**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Final Report for the ATC Evaluation of the Prototype Airport Surveillance Radar Wind Shear Processor (ASR-WSP) at Orlando International Airport.

DN (9) Technical note

AU (10) Radame, Martinez

RD (11) Mar 1993

PG (12) 20 Pages

RS (14) DOT/FAA/CT-TN92/48

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *SEARCH RADAR, *WIND SHEAR, *METEOROLOGICAL DATA ACCURACY, AIR TRAFFIC, AIRPORTS, ALGORITHMS, GUSTS, INTERNATIONAL AIRPORTS, RADAR, SUMMER, SUPERVISORS, SURVEILLANCE, WEATHER, WIND, AIR TRAFFIC CONTROL SYSTEMS

AB (27) This report presents the results of the FAA's air traffic control (ATC) operational evaluation of an Airport Surveillance Radar Wind Shear Processor (ASR-WSP) which operated at Orlando International Airport (MCO) during the summer of 1992. The evaluation was conducted in order to obtain reaction to the ASR-WSP weather products and displays. It was concluded that the system is capable of meeting ATC operational needs and in general was rated as very useful. However, the accuracy of the gust front algorithm and to a lesser extent, the accuracy of the microburst algorithm are two features that the controllers/supervisors agree need some improvement.... Airport Surveillance Radar Wind Shear Processor(ASR-WSP), Wind shear, Aviation weather.

AN (1) AD-A263 939/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Traffic Operational Evaluation Plan of the Automated Surface Observing System (ASOS) Displays.

DN (9) Technical note

AU (10) Benner, William

Malitsky, Chris

Randazzo, Alanna

Ware, Bruce E.

RD (11) Mar 1993

PG (12) 34 Pages

RS (14) DOT/FAA/CT-TN92/36

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS

AIR TRAFFIC, AIRPORTS, COLLECTION, CORPORATIONS, DISPLAY SYSTEMS, INTERNATIONAL AIRPORTS, ISLANDS, MANAGEMENT, PRODUCTION, QUESTIONNAIRES, SITES, SPECIALISTS, STATIONS, SURFACES, TOWERS,

AIRPORT

CONTROL TOWERS, TRAINING, VISIBILITY, WEATHER

ID (25) Air Traffic Control Specialist(ATCS), Automated Surface Observing System(ASOS), Evaluation air traffic control

AB (27) The Automated Surface Observing System (ASOS) is a weather collection and display system that will be installed in airport traffic control towers (ATCT). The system is being procured, installed, operated, and maintained by the National Weather Service (NWS) for the Federal Aviation Administration (FAA). This plan outlines the FAA's evaluation of the limited production ASOS system, which is being produced by SMI Corporation. The FAA will conduct the evaluation of the limited production ASOS at seven air traffic field sites. They are Will Rogers World Airport, OK., Wiley Post Airport, OK., Tulsa International Airport, OK., Lincoln Municipal Airport, NE., Johnson County Airport, KS., St. Joseph Airport, MO., and Grand Island Airport, NE. Four of the named sites will be commissioned and the controller will be expected to use only that weather information generated by the ASOS and have the capability of inputting tower observed visibility when it falls below 4 miles. The remaining three sites will be noncommissioned sites where the controllers will undergo training and then evaluate the ASOS as they familiarize themselves with the system. Two of the three sites are also Limited Aviation Weather Reporting Station (LAWRS) which will permit the controller to augment the weather. Data will be collected via questionnaires completed by the air traffic control specialist

(ATCS) at the seven sites and analyzed by FAA Technical Center personnel. The results of the evaluation will be used for consideration in making changes to the ASOS system prior to full production.

AN (1) AD-A266 070/XAG

**FG (2) 130100
110300**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Ventilation Effects on Smoke and Temperature in an Aircraft Cabin Quarter-Scale Model.

DN (9) Final rept.

AU (10) Abramowitz, Allan
Fann, Franklin

RD (11) Mar 1993

PG (12) 35 Pages

RS (14) DOT/FAA/CT-89/25

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT CABINS, *SMOKE, *TEMPERATURE, *VENTILATION
AIRCRAFT, EXCHANGE, HEAT, MODELS, QUANTITY, RATES, SCALE, SCALE
MODELS,
TEST AND EVALUATION, TIME

AB (27) Fire tests were conducted on a quarter-scale model of an aircraft cabin to determine ventilation effects on temperature and smoke. The ventilation rates were varied between 1 1/4 and 2 1/2 minutes, time for an air exchange (quarter scale). The data indicate that there were no significant changes in the cabin temperatures and in the quantity of heat being removed from the cabin by changing ventilation rates. The increased flows tended to redistribute small quantities of smoke within the cabin and out the exhaust. Quarter scale, Ventilation Temperature, Smoke.

AN (1) AD-A262 908/XAG

**FG (2) 060500
050200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE**

TI (6) Index of International Publications in Aerospace Medicine.

DN (9) Final rept.

AU (10) Antunano, Melchor J.

RD (11) Feb 1993

PG (12) 26 Pages

RS (14) DOT/FAA/AM-93/3

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AEROSPACE MEDICINE, *BIBLIOGRAPHIES, *INDEXES

ACCIDENT INVESTIGATIONS, DATA BASES, DIVING, INTERNATIONAL,
PHYSIOLOGY,

PERFORMANCE(HUMAN), SKILLS, MEDICAL EXAMINATION

AB (27) The Index of International Publications in Aerospace Medicine is a comprehensive listing of international publications in clinical aerospace medicine, operational aerospace medicine, aerospace physiology, environmental medicine/physiology, diving medicine/physiology, aerospace human factors, as well as other important topics directly- or indirectly-related to aerospace medicine. The Index is divided into six major sections: (1) Open Publications in General Aerospace Medicine (2) Government Publications in General Aerospace Medicine (3) Publications in other Topics related to Aerospace Medicine (4) Proceedings from Scientific Meetings, Conferences, and Symposiums in Aerospace Medicine (5) Journals, Newsletters, and Bulletins in Aerospace Medicine (6) Online Computerized Databases containing Bibliographic Information in Aerospace Medicine and Related Disciplines.... Aerospace medicine, Accident investigation, Bibliography, Diving, Human factors, Physiology.

AN (1) AD-A263 078/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Structure and Utility of Blind Speed Intervals Associated with Doppler Measurements of Range Rate.

DN (9) Technical note

AU (10) Mulholland, Robert G.

RD (11) Feb 1993

PG (12) 59 Pages

RS (14) DOT/FAA/CT-TN92/27

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *DOPPLER RADAR

AIRCRAFT, AMBIGUITY, CARRIER FREQUENCIES, CELLS, CHANNELS,
COLLECTION,

ENERGY, FILTRATION, FREQUENCY, INTERVALS, NUMBERS, PHASE, PHASE SHIFT, PROCESSING, PULSES, RADAR, RATES, REAL NUMBERS, REFLECTION, SLANT RANGE, THEOREMS, TIME, VELOCITY, MEASUREMENT

AB (27) In the case of a coherent pulsed radar system, the time rate of change of the slant range of an aircraft may be determined to within an integer multiple of a known speed by measuring the pulse-to-pulse phase shift in the reflection of a transmitted wave train of electromagnetic energy. The integer multiplier is not necessarily a known, and lack of knowledge of the multiplier gives rise to an ambiguity. The ambiguity may be removed by appropriate processing of the pulse-to-pulse phase shift in the reflection of each of two wave trains that differ in one or both of the dimensions of interpulse period and carrier frequency. The processing is tantamount to a two-phase estimation procedure that is based on some properties of a collection of intervals of real numbers generated by two known speeds that serve as the moduli of distinct congruence relations. There is a connection between this procedure and the use of the Chinese remainder theorem in a multiple channel search system as a means for determining true slant range from several ambiguous range cell numbers.... Doppler filtering, Aircraft range rate, Blind speed, Chinese remainder theorem.

AN (1) AD-A263 182/XAG

FG (2) 040200
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Traffic Operational Evaluation Plan for the Prototype Airport Surveillance Radar Wind Shear Processor (ASR-WSP) at Orlando International Airport.

DN (9) Technical rept.

AU (10) Martinez, Radame

RD (11) Feb 1993

PG (12) 17 Pages

RS (14) DOT/FAA/CT-TN92/45

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *INTERNATIONAL AIRPORTS, *METEOROLOGICAL RADAR, *SEARCH

RADAR, *WIND SHEAR, *PROTOTYPES

AIR TRAFFIC CONTROLLERS, APPROACH, CHANNELS, DETECTION, LOW ALTITUDE,

LOW LEVEL, MANAGEMENT, MISSIONS, MODIFICATION, PRECIPITATION,

PRODUCTION, QUESTIONNAIRES, RADAR, REGIONS, SAFETY, SUPERVISORS, SURVEILLANCE, TERMINALS, TRAFFIC, TRAVEL, WEATHER, WIND, FLORIDA
AB (27) The Airport Surveillance Radar Wind Shear Processor (ASR-WSP) (also known as Airport Surveillance Radar-9 (ASR-9) modification for low altitude wind shear detection) is a production ASR-9 with an expanded weather channel for added processing capabilities. The primary mission of the ASR-WSP is to enhance the safety of air travel through the timely detection and reporting of hazardous wind shear in and near the terminal approach and departure zones of the airport. It will also improve the management of air traffic (AT) in the terminal area through the forecast of precipitation, and ultimately the detection of other hazardous weather phenomena. The ASR-WSP may be used as a stand-alone system at airports without a Terminal Doppler Weather Radar (TDWR) or Enhanced-Low Level Wind Shear Alert System (E-LLWAS), or in an integrated mode with either, or both, the TDWR and E-LLWAS. This plan outlines the Federal Aviation Administration's (FAA) operational evaluation of an ASR-WSP which will operate at Orlando International Airport (MCO) during the summer of 1992. Data will be collected via questionnaires completed by air traffic controllers and supervisors. The results of the evaluation will be analyzed and any necessary changes will be made prior to full production.... Airport Surveillance Radar Wind Shear Processor (ASR-WSP), ASR-9, Weather radar, Aviation weather.

AN (1) AD-A263 231/XAG

FG (2) 131200
130400
010309

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Effectiveness of Hand-Held Fire Extinguishers on Cargo Container Fires.

DN (9) Technical note

AU (10) Dickerson, Leroy

Blake, David

RD (11) Feb 1993

PG (12) 21 Pages

RS (14) DOT/FAA/CT-TN92/42

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CARGO, *HAND HELD, *FIRE CONTROL SYSTEM COMPONENTS

AIRCRAFT, COMPARTMENTS, CONTAINERS, INDIAN OCEAN, INTERVENTION, FIRE

FIGHTING, FIRE SAFETY, SOUTH AFRICA, SHIP DECKS, TEST AND EVALUATION

ID (25) C-747 Aircraft, *Cargo containers, Halon 1211, Halon 1301, Loaded stream water, *Aircraft cargo fires, Federal aviation administration, Fire extinguishing, Fire extinguishers agents

AB (27) The purpose of this project was to determine the effectiveness of firefighter intervention using hand-held fire extinguishers on fires in 150- and 800-cubic-foot cargo containers. This test plan was undertaken following a fire in the main deck cargo compartment of a South African Airlines Boeing 747-244B (COMBI) on November 27, 1987. The airplane crashed into the Indian Ocean killing all occupants. A total of 27 tests were performed; 23 in the 150-cubic-foot cargo container series, and 4 in the 800-cubic-foot cargo container series. Three agents were tested--Halon 1211, Halon 1301, and loaded stream water. Only the Halon 1211 agent was partially successful in extinguishing this type of Class A fire. Seven of the 23 fires were extinguished. The rigid cargo containers contained and controlled the test fires through oxygen starvation in 18 of 20 fire tests that were not extinguished.... Aircraft cargo fire, Cargo containers.

AN (1) AD-A263 238/XAG

FG (2) 170900

040200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Plan for the Evaluation of the Prototype Terminal Doppler Weather Radar (TDWR) System.

DN (9) Technical note

AU (10) Stretcher, Baxter R.

RD (11) Feb 1993

PG (12) 22 Pages

RS (14) DOT/FAA/CT-TN92/44

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR, *AIR TRAFFIC CONTROL TERMINAL AREAS, *WEATHER

FORECASTING, *DOPPLER RADAR

AIR TRAFFIC, INTERFACES, INTERNATIONAL AIRPORTS, MANAGEMENT, PROTOTYPES, SUMMER, TOWERS, WEATHER

ID (25) TDWR(Terminal Doppler Weather Radar), RDT(Ribbon Display Terminals), GSD(Geographical Situation Displays)

AB (27) The purpose of this plan is to detail the procedural approach and methods to be employed in evaluating the air traffic control (ATC) interface of the prototype Terminal Doppler Weather Radar (TDWR)

system. The plan describes the evaluation that will be performed at the Orlando International Airport (MCO) during the summer of 1992. The Federal Aviation Administration (FAA) Technical Center will be interested in the controller's and supervisor's evaluation of the Geographical Situation Display (GSD) and the Ribbon Display Terminal (RDT), installed at the ATC tower. The evaluation of these displays may determine the operational suitability of the TDWR in the National Airspace System (NAS).... Terminal Doppler Weather Radar(TDWR), Geographical Situation Display(GSD), Ribbon Display Terminal(RDT), Weather radar evaluation.

AN (1) AD-A263 481/XAG

FG (2) 230600

010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Narrow-Body Aircraft Water Spray Optimization Study.

DN (9) Technical note

AU (10) Marker, Timothy R.

RD (11) Feb 1993

PG (12) 39 Pages

RS (14) DOT/FAA/CT-TN93/3

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *AIRCRAFT FIRES, *WATER FLOW, *OPTIMIZATION, *FIRE FIGHTING FLOW RATE, SURVIVABILITY, GROUND BASED

ID (25) SAVE(Safety Aircraft and Vehicles Equipment), Fractional effective dose, Narrow body aircraft

AB (27) Twenty-five full-scale tests were conducted in a modified 707 narrow-body fuselage as part of an aircraft cabin water spray optimization study. The purpose of the study was to test several spray configurations by varying the amount of water sprayed, the flow rate, and orientation of the nozzles, while keeping the fire conditions constant, in an attempt to minimize the quantity of water required to effectively suppress a postcrash aircraft fire and improve occupant survivability. The original Safety Aircraft and Vehicles Equipment (SAVE) system was configured in the narrow-body cabin using 120 nozzles. Initially, three tests were conducted using 72, 48, and 24 gallons of water for 3-, 2-, and 1-minute spray durations, respectively. In the following series of tests, one-third of the SAVE system (40 nozzles) was configured in the area of the fire using 24, 16, and 8 gallons of water for 3-, 2-, and 1-minute spray durations, respectively. During the final series of tests, the spray system was

configured in five separate sections or 'zones' with each zone carrying eight nozzles. A thermocouple was mounted at ceiling height in each zone, allowing for the activation of a particular zone when the temperature reached a predetermined value. The flow rate of the nozzles was varied as was the amount of water available during the tests. For comparison, a test was conducted without spraying water in order to establish a 'baseline.' Temperature, heat flux, smoke levels, gas concentrations, and video were continuously monitored at various locations throughout the fuselage. The optimal zoned system was more effective than the SAVE system and used only 11 percent of the water.

AN (1) AD-A265 611/XAG

FG (2) 010200

010600

010500

050300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) FAA Aviation Forecasts, Fiscal Years 1993-2004.

RD (11) Feb 1993

PG (12) 229 Pages

RS (14) FAA-APO-93-1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AVIATION FUELS, *COMMERCIAL AVIATION, *INFLATION(ECONOMICS), *FORECASTING, *AIR TRAFFIC CONTROL SYSTEMS

AIRPORTS, BUDGETS, CONTROL CENTERS, DOMESTIC, FACILITIES, FLIGHT, INDUSTRIES, INTERNATIONAL, LOSSES, MANAGEMENT, PASSENGERS,

PLANNING,

STATIONS, STATISTICS, TIME, TOWERS, MARINE CORPS AVIATION, NAVAL AVIATION, ARMY AVIATION, CIVIL AVIATION

ID (25) Federal aviation administration, Air carrier, Commuter, Air taxi, National aviation system, Air Force aviation, *Economics(Demand)

AB (27) This report contains the Fiscal Years 1993-2004 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities.

These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the major users of the National Aviation System: air carriers, air taxi/commuters, military, and general aviation. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state

and local authorities, the aviation industry, and the general public. The lethargy of both the U. S. and world economies during the past several years has caused the aviation industry to experience continuing financial losses. However, the outlook for the 12-year forecast period is for moderate economic growth, stable real fuel prices, and modest inflation. Based on these assumptions, aviation activity for fiscal year 2004 is forecast to increase by 24.6 percent at towered airports and 27.0 percent at air route traffic control centers. The general aviation active fleet and hours flown are forecast to increase by 7.0 and 18.1 percent, respectively, during the same time period. Scheduled domestic revenue passenger miles (RPMs) are forecast to increase 58.3 percent, scheduled international RPMs are forecast to increase by 115.3 percent, and regional/commuter RPMs are forecast to increase by 145.1 percent.... Air carrier, Aviation statistics, Commuter/air taxi, Aviation activity forecasts, Federal Aviation Administration, General aviation, Military.

AN (1) AD-A265 898/XAG

FG (2) 040200

170900

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SURVEILLANCE OFFICE

TI (6) Investigation of Outflow Strength Variability in Florida Downburst Producing Storms.

DN (9) Final rept.

AU (10) Johnson, J. T.

Eilts, Michael

Droegemeier, Kevin

RD (11) Feb 1993

PG (12) 119 Pages

RS (14) DOT/FAA/NR-93/5

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Original contains color plates: All DTIC/NTIS reproductions will be in black and white.

DE (23) *STORMS, *WEATHER FORECASTING, *DOPPLER RADAR, *WIND SHEAR AIRPORTS, CLOUDS, MATHEMATICAL MODELS, FLORIDA, THUNDERSTORMS, ATMOSPHERIC PRECIPITATION, FREEZING, REFLECTIVITY

ID (25) Outflow, TDWR(Terminal Doppler Weather Radar), Downbursts, Downdrafts, Updrafts

AB (27) With the Federal Aviation Administration introducing Doppler weather radar to high-traffic airports in the form of the Terminal Doppler

Weather Radar (TDWR), improved identification of dangerous windshears from downbursts and other weather phenomena will be possible. Using detection and prediction algorithms, the TDWR system will give controllers and pilots more information about the weather situation in the terminal area than is available heretofore. During the summer of 1990, a prototype TDWR system was tested and evaluated in Orlando, Florida with more than 500 downbursts detected. Many storms possessing apparently 'similar' characteristics were found to produce a wide variety of outflow speeds on days with nearly the same environmental structure. In this study, we use single-Doppler radar observations, surface mesonet data and a 3-D numerical cloud model in an attempt to determine causes for the observed variability. In particular, we examine 8 downbursts from August 18, 21 and 22 as well as 5 simulated downbursts. Our results show that the observed variability is explained neither by Doppler radar signatures known to precede downbursts (e.g., convergence and rotation aloft) nor by minor but detectable variations in the environment among the three days examined. Suspecting somewhat more subtle mechanisms, we examined detailed microphysical processes within numerically simulated storms

AN (1) AD-A266 057/XAG

FG (2) 010600

131200

210200

110700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Proceedings of the International Conference for the Promotion of Advanced Fire Resistant Aircraft Interior Materials, Held in Atlantic City, New Jersey on February 9 - 11, 1993.

RD (11) 11 Feb 1993

PG (12) 293 Pages

RS (14) DOT/FAA/93/3

RN (18) XJ-XD

RC (20) Unclassified report

**DE (23) *FIRE RESISTANT MATERIALS, *AIRCRAFT CABINS
FIRE SAFETY, REQUIREMENTS, TEST METHODS, TEST AND EVALUATION,
URBAN**

**AREAS, SYMPOSIA, THERMOPLASTIC RESINS, LAMINATES, ADHESIVES,
INSULATION, FOAM, ACOUSTIC MATERIALS, PHENOLIC PLASTICS,
POLYCARBONATES, AVIATION SAFETY**

ID (25) Polyimides, Primaset(TM), Polyolefin fibers, Poly(Arylene Phosphine Oxide), Fire hardening, Heat release, Rate test

AB (27) This publication contains the proceedings of the International Conference for the Promotion of Advanced Fire Resistant Aircraft Interior Materials held in Atlantic City, New Jersey, February 9-11, 1993. Presentations were made in the following areas: advanced fire resistant materials, advanced technology, test methods and modeling, and future needs and requirements... . Advanced fire resistant materials, Aircraft interior materials, Fire test methods, Fire safety

AN (1) AD-A260 695/XAG

FG (2) 010200

010500

230200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Review of Civil Aviation Propeller-to-Person Accidents: 1980-1989.

DN (9) Final rept.

AU (10) Collins, William E.

RD (11) Jan 1993

PG (12) 10 Pages

RS (14) DOT/FAA/AM-93/2

RN (18) XH-XD

RC (20) Unclassified report

**DE (23) *PAINTS, *ROTOR BLADES, *SAFETY, *TAKEOFF, *WOUNDS AND INJURIES,
*AERIAL PROPELLERS, *AVIATION ACCIDENTS
ATTENTION, ECONOMICS, GROUND CREWS, NUMBERS, PASSENGERS, PILOTS,
RISK,**

TRAINING, VISUAL PERCEPTION, VISUAL PERCEPTION, VISUAL SURVEILLANCE

ID (25) Federal aviation administration, National transportation safety board

AB (27) Various types of paint schemes on aircraft propeller and rotor blades are used to improve the visual conspicuity and attention-getting value of those blades when they are rotating. The improved conspicuity resulting from the paint schemes has the purpose of reducing the number of injuries and fatalities that might occur due to accidental contact with a rotating blade by pilots, passengers, or ground crew. The present study was undertaken to provide information regarding the circumstances surrounding such accidents in recent years and to compare those findings with the frequency and circumstances of propeller accidents during the 1965-1979 period. Computer retrievals of brief reports of all propeller accidents during the period from 1980 through 1989 were provided by the National Transportation Safety Board. Those reports were examined and analyzed in terms of type of accident, degree

of injury, actions of pilots, action of passengers and ground crew, night or day, and other conditions. The computer search yielded a total of 104 reports of propeller-to-person accidents involving 106 persons. Prop-to-person accident frequency for the 1980-1989 period was notably lower than that previously reported for the 1960's and 1970's. Recent declines appear due to a combination of FAA educational efforts, economic conditions, and changes in the types of aircraft used by present aviation pilots. Irrespective of the decade under study, persons at most risk for a propeller-to-person accident are deplaning passengers and passengers attempting to assist the pilot prior to takeoff and after landing.... Propeller Accidents, Pilot Training, Safety.

AN (1) AD-A261 410/XAG

FG (2) 050200

050900

120600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Conversion of the CTA, Inc., En Route Operations Concepts Database into a Formal Sentence Outline Job Task Taxonomy.

DN (9) Final rept.

AU (10) Rodgers, Mark D.

Drechsler, Gena K.

RD (11) Jan 1993

PG (12) 77 Pages

RS (14) DOT/FAA/AM-93/1

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *HOST COMPUTERS, *INFORMATION EXCHANGE, *AIR TRAFFIC

CONTROLLERS, *JOB

ANALYSIS

ABBREVIATIONS, AIR TRAFFIC, CONVERSION, ERRORS, HUMANS,

IDENTIFICATION,

INTERFACES, JOBS, LANGUAGE, PERFORMANCE(HUMAN), QUALITY, QUALITY

ASSURANCE, SPECIALISTS, TRAFFIC, TRAINING, ROUTING, TAXONOMY,

HIERARCHIES

AB (27) FAA Air Traffic Control Operations Concepts Volume VI: ARTCC-Host En

Route Controllers (1990) developed by CTA, Inc., a technical

description of the duties of an En Route air traffic control specialist

(ATCS), formatted in User Interface Language, was restructured into a

hierarchical formal sentence outline. To ensure that none of the

meaning associated with a task or task element was lost during the conversion, the revised document was reviewed by subject matter experts (SMEs) consisting of five groups of six En Route controllers and a quality assurance subject matter expert. SMEs looked for words, phrases, or acronyms not commonly used by En Route controllers, and illogical sequencing of duties described in the document. Appropriate suggestions for change were implemented into the document before the next review. Five-hundred seventy-five changes were made to the document, with only two of these changes made during the final review, confirming that an improved document resulted from the research. The restructured document is intended to assist in the identification of tasks not performed or performed incorrectly during the commission of an operational error. However, an easily understood, detailed description of duties performed by an En Route ATCS has potential not only for use by researchers interested in En Route ATCS tasks, but also by quality assurance investigation teams and training personnel.... Air traffic control, Job tasks, Human factors, Human performance, Training.

AN (1) AD-A263 600/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC CITY NJ

TI (6) Visual Approach Data Collection at St. Louis Lambert Field (STL).

DN (9) Final rept.

AU (10) Thomas, James

Timoteo, Dominic

Transue, Amy E.

RD (11) Jan 1993

PG (12) 58 Pages

RS (14) DOT/FAA/CT-TN93/2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *INTERNATIONAL AIRPORTS, *RUNWAYS, *DATA ACQUISITION, *APPROACH INDICATORS

ACCURACY, AIRCRAFT, AIRPORTS, DATA BASES, ERRORS, MANAGEMENT,

RADAR,

STANDARDS, SURVEILLANCE, SAINT LOUIS(MISSOURI)

AB (27) Data on aircraft executing simultaneous visual approaches to closely

spaced parallel and intersecting runways were collected at Lambert-St.

Louis International Airport (STL) between August 2 and October 23,

1990. The purpose of the data collection was to provide an accurate

data base of the navigational characteristics of aircraft flying the

'fly visual' segment of the approach. Aircraft position data were

collected using the in-place STL surveillance primary and secondary radars. The data were reduced and a limited analysis was performed at the Federal Aviation Administration (FAA) Technical Center by ATC Technology (ACD-340) personnel. The discussion in the Final Report concerns the accuracy of the collected position data and possible sources of error in the data collection. The reduced data were sent to the Standards Development Branch (AVN-540) for further analysis. AVN-540 will report on their findings and recommendations.... Lambert field, St. Louis International Airport, Visual approach.

AN (1) AD-A276 958/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEM

CAPACITY AND REQUIREMENTS

TI (6) 1993 Aviation System Capacity Plan, (1993).

RD (11) 1993

PG (12) 367 Pages

RS (14) DOT/FAA/ASC-93-1

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Prepared in collaboration with Mitre Corp., McLean, VA, MiTech Inc., Rockville, MD and JIL Systems, Arlington, VA.

DE (23) *AIRPORTS, *CIVIL AVIATION

AIR TRANSPORTATION, DELAY, REDUCTION, TRANSPORTATION, TRAVEL, ECONOMICS, AIR TRAFFIC

AB (27) A comprehensive review of the Federal Aviation Administration's program to improve the capacity of the National Air Transportation System. The Plan identifies the causes and extent of capacity and delay problems currently associated with air travel in the U.S. and outlines various planned and ongoing FAA projects that will reduce the severity of the problems in the future. The major areas of discussion are: (1) Airport Development (2) Airport and Airspace Capacity (3) Technology for Capacity Improvement (4) Marketplace Solutions. Civil aviation, Airport capacity, Aviation capacity, Aviation delay reduction.

AN (1) AD-A280 661/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT

PLANNING AND PROGRAMMING

TI (6) Annual Report (12th) of Accomplishments Under the Airport Improvement

Program. Fiscal Year 1993.

DN (9) Annual rept.

RD (11) 1993

PG (12) 124 Pages

RS (14) DOT/FAA/PP-94-2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRPORTS

AIRPORT CONTROL TOWERS, PAVEMENTS, AIR QUALITY, NOISE, LAND USE

ID (25) *Airport improvement program

AB (27) Annual report of the Airport Improvement Program (AIP) for the fiscal year ending September 30, 1993, is the twelfth report of activity under authority granted by the Airport and Airway Improvement Act of 1982, as amended. Section 521 of the Airport and Airway Improvement Act of 1982, as amended, requires that the Secretary of Transportation submit an annual report to Congress describing the accomplishments of the airport grant program.

AN (1) AD-A280 694/XAG

FG (2) 010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Criminal Acts Against Civil Aviation. 1993.

DN (9) Annual rept.

RD (11) 1993

PG (12) 106 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *CRIMES, *AIRCRAFT HIJACKING

BOMBING, ATTACK, SCENARIOS, AIRCRAFT CARRIERS, INTERNATIONAL AIRPORTS,

HOSTAGES, STATISTICAL ANALYSIS, CASUALTIES

AB (27) Since 1986, the Federal Aviation Administration's Office of Civil Aviation Security has been publishing an annual report entitled Criminal Acts Against Civil Aviation. This report is a compilation of criminal incidents against civil aviation aircraft and interests worldwide. As in last year's publication, the 1993 issue contains feature articles and geographic overviews. Incidents are summarized in the overviews, and the feature articles focus on specific aviation-related issues or case histories. There is also a section in which incidents are compared for the 5-year period, 1989 to 1993.

Charts, graphs, and maps appear throughout the publication. In one minor change from last year's format, an incident chronology appears at the beginning of each geographic overview section. In addition, an asterisk has been added to incidents which are not counted in statistics but are reported for information. This is to distinguish them from those incidents which are counted in statistics.

AN (1) AD-A288 307/XAG

FG (2) 050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) U S. Civil Airmen Statistics Calendar Year 1993.

DN (9) Annual rept.

RD (11) 1993

PG (12) 155 Pages

RS (14) FAA-APO-94-6

RN (18) XH-XD

RC (20) Unclassified report

DE (23) PILOTS, COUNTING METHODS, STATISTICS

ID (25) NONPILOTS

AB (27) This report contains calendar year statistics on pilots and nonpilots and the number of certificates issued. It also contains counts of pilots and nonpilots by state and county.

AN (1) AD-A293 777/XAG

FG (2) 010500

010600

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) Establishment Criteria Airport Surface Detection Equipment (ASDE) III

AU (10) Barry, Lawrence

Hoffer, Stefan

Bomberger, Earl

Berardino, Frank

RD (11) 1993

PG (12) 66 Pages

RS (14) FAA-APO-93-12

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRPORT RADAR SYSTEMS, *GROUND TRAFFIC MATHEMATICAL MODELS, ALGORITHMS, POSITION(LOCATION), ECONOMIC ANALYSIS, COST EFFECTIVENESS, COST ANALYSIS, COMPARISON, AIRPORT CONTROL TOWERS, COST MODELS, AVIATION ACCIDENTS, CIVIL AVIATION, LIFE CYCLE COSTS, NUMERICAL METHODS AND PROCEDURES, DESIGN CRITERIA, AVIATION SAFETY, BENEFITS, RUNWAYS, COLLISION AVOIDANCE

AB (27) This report presents the criteria and computation methods to be used in determining eligibility of terminal locations for the establishment of Airport Surface Detection Equipment (ASDE) based on an economic analysis of the costs and benefits of this equipment. The criteria compare the present value of ASDE benefits at a site with the present value of ASDE costs over a 20-year time frame. A location is eligible for ASDE establishment when the benefits which derive from operating the equipment exceed the Installation and operation costs-the Benefit/Cost ratio is greater than or equal to one. An ASCE meets discontinuance criteria when the costs of continued operation exceed the benefits-the Benefit/Cost ratio is less than one. The criteria have been revised from those published in December 1975, to include improved benefit algorithms, incorporate up-to-date methods of analysis, and adjust for changes in the aviation environment since 1975. Distinctions based on aircraft size are also eliminated. In addition, ASDE costs, accident rates and benefit unit values including values of statistical lives saved, injuries avoided, property damage, and passenger and aircraft time saved-have been updated to incorporate the most recent data. Based on projections of current future aviation activity, the new criteria, when applied, suggest those sites that should be considered candidates for ASDEs. When compared to the results at the time 1975 criteria were published, more sites now qualify for ASDEs. (AN)

AN (1) AD-A294 705/XAG

FG (2) 010300

010400

050200

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1993.

DN (9) Annual rept.

RD (11) 1993
PG (12) 138 Pages
RS (14) FAA-APO-95-5
RN (18) XJ-XD
RC (20) Unclassified report
DE (23) *STATISTICAL DATA, *HANDBOOKS, *GENERAL AVIATION AIRCRAFT AIRCRAFT, EXPORTS, PRODUCTION, AERONAUTICS, AIR FORCE PERSONNEL, AVIATION ACCIDENTS, CIVIL AVIATION, AIRPORTS, AIR TRANSPORTATION, DICTIONARIES, IMPORTS
ID (25) FAA(FEDERAL AVIATION ADMINISTRATION)
AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production and Imports/Exports, and a Glossary of the terms used in this publication.

AN (1) AD-A260 106/XAG
FG (2) 040200
120700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Automated Weather Observing System (AWOS) Data Acquisition System (ADAS) operational Test and Evaluation (OT and E) Integration and OT and E operational Test Plan.

DN (9) Technical note
AU (10) Barab, John
Stratton, Jock
RD (11) Dec 1992
PG (12) 69 Pages
RS (14) DOT/FAA/CT-TN90/65
RN (18) XH-DOT/FAA/CT
RC (20) Unclassified report
DE (23) *DATA ACQUISITION, *METEOROLOGICAL DATA, *WEATHER FORECASTING, *INTEGRATED SYSTEMS
DATA LINKS, INTEGRATION, MANAGEMENT, TEST AND EVALUATION, WEATHER, OPERATIONAL EFFECTIVENESS, INTERFACES, CONFIGURATIONS, REQUIREMENTS, OBSERVATION
ID (25) AWOS(Automated Weather Observing System)
AB (27) The attached document delineates the various plans associated with the preparation and conduct of Operational Test and Evaluation (OT and E) integration and OT and E Operational testing of the Automated Weather

Observing System (AWOS) Data Acquisition System (ADAS) at the Federal Aviation Administration (FAA) Technical Center. It is being circulated to organizations participating in the testing and implementation of the ADAS... Automated Weather Observing System (AWOS), AWOS Data Acquisition System (ADAS), Data Link Processor (DLP).

AN (1) AD-A260 221/XAG
FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Results of DATAS Investigation of Illegal Mode S ID's at JFK Airport.

DN (9) Final rept. 25 Aug-Sep 29 92

AU (10) Pagano, Thomas
Van Dongen, John
Wapelhorst, Leo

RD (11) Dec 1992

PG (12) 20 Pages

RS (14) DOT/FAA/CT-92/26

RN (18) XH-DOT/FAA

RC (20) Unclassified report

DE (23) *COLLISION AVOIDANCE, *DATA LINKS, *AIR TRAFFIC CONTROL SYSTEMS AIRBORNE, AIRCRAFT, DEPLOYMENT, MANAGEMENT, MONITORS, TEST AND EVALUATION, TRAFFIC

AB (27) This report documents the second deployment of the Data Link Test and Analysis System (DATAS) as a Traffic Alert and Collision System (TCAS) monitor. The purpose was to identify aircraft which were reporting Illegal Mode Select (Mode S) ID's. The project was conducted by the Research Directorate for Aviation Technology, Airborne Collision Avoidance and Data Systems Branch, Federal Aviation Administration (FAA) Technical Center.... DATAS, TCAS, Mode S ID's.

AN (1) AD-A263 229/XAG
FG (2) 170300
250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Controller Evaluation of Initial Terminal Data Link ATC Services: Mini Study 3.

DN (9) Final rept.

AU (10) Talotta, Nicholas J.
Darby, Evan
Chandler, George

Le, Cuong
Shochet, Ephraim
RD (11) Dec 1992
PG (12) 137 Pages
RS (14) DOT/FAA/CT-92/18
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *COLLISION AVOIDANCE, *DATA LINKS, *AIR TRAFFIC CONTROL SYSTEMS
AIR TRAFFIC, AIRBORNE, AIR TRAFFIC CONTROL TERMINAL AREAS
AB (27) This report documents the third Federal Aviation Administration (FAA)
controller evaluation of an initial group of four terminal air traffic
control (ATC) services and functions which are under development for
implementation on a Data Link air-ground communications system. The
research was conducted at the Federal Aviation Administration Technical
Center by the Research Directorate for Aviation Technology,
Airborne-Collision Avoidance and Data Systems Branch, ACD-320.... ARTS
IIIA, Terminal ATC, Data link.

AN (1) AD-A269 042/XAG

FG (2) 010200
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airport Activity Statistics of Certificated Route Air Carriers, 1992.

DN (9) Rept. for period ending 31 Dec 92.

RD (11) 31 Dec 1992

PG (12) 373 Pages

RS (14) FAA-APO-93-8

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *AIR TRANSPORTATION

CARGO, PASSENGERS, INTERNATIONAL AIRPORTS, AIRPORTS, COLLECTION,
DATA

BASES

ID (25) *Air carriers

AB (27) There are some major changes in this publication due to the new T-100
data collection system for U.S. air carriers which began January 1,
1990. The format has been changed to comply with the regulations of 14
CFR 241.19.6 that restrict public disclosure of T-100 detail and
summary international data. Non U.S. airport data does not appear. Data
is no longer broken out by domestic or international operations at
airports, only system operations are shown. This edition presents the
volume of revenue passenger, freight, and mail traffic handled by the
nation's large certificated air carriers at each airport served by

these scheduled airlines during the 12 months ending December 31, 1992.
In addition, a presentation of aircraft departures is shown including
detail by aircraft type for total departures performed in scheduled,
nonscheduled, and all services. Large certificated air carriers hold
Certificates of Public Convenience and Necessity issued by the
Department of Transportation (DOT) authorizing the performance of air
transportation. Large certificated air carriers operate aircraft with
seating capacity of more than 60 seats or a maximum payload capacity of
more than 18,000 pounds. Data for charter only, commuter, intra-state,
and foreign-flag air carriers are not included in this publication

AN (1) AD-A277 866/XAG

FG (2) 010309

010305

010600

050200

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

POLICY AND P LANS

TI (6) Census U.S. Civil Aircraft Calendar Year 1992.

DN (9) Annual rept.

RD (11) 31 Dec 1992

PG (12) 406 Pages

RS (14) FAA-APO-94-4

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMMERCIAL AIRCRAFT, *GENERAL AVIATION AIRCRAFT, *PASSENGER
AIRCRAFT,

*TRANSPORT AIRCRAFT, *CIVIL AVIATION

UNITED STATES, TABLES(DATA), STATISTICAL DATA, CENSUS

ID (25) Air corners, General aviation, Registered aircraft, Census(1992),
FAA-APO-94-4

AB (27) This report present information about the U.S. civil aircraft fleet. It
includes detailed tables of air carrier aircraft and an inventory of
registered aircraft by manufacturer and model, and general aviation
aircraft by state and county of the owner

AN (1) AD-A258 210/XAG

FG (2) 080200

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AIRPORT**

PLANNING AND PROGRAMMING

TI (6) An Approach to Automated Terrain Classification from Digital Elevation Model

AU (10) Graff, Linda H.

RD (11) 23 Nov 1992

PG (12) 11 Pages

RS (14) TEC-R-195

RN (18) XA-TEC/FBV

RC (20) Unclassified report

DE (23) *ELEVATION, *MODELS, *MOUNTS, *TOPOGRAPHIC MAPS

ALGORITHMS, CLASSIFICATION, LANDFORMS, MOUNTAINS, TERRAIN

ID (25) Elevation models, Terrain features, Elevation models

AB (27) Using digital elevation model data, landforms are classified into two broad, generic terrain features -- mounts and non-mounts. Mount represents an aggregation of elevated features including hills, mountains and ranges. All remaining features are classified collectively as non-mount. The results of this work suggest that it may be possible to acceptably replicate the manual classification of certain generic terrain features. However, the general utility of the mount/non-mount classification appears to be limited by the classification algorithms, the nature of the regional terrain and the quality of available digital data. Possible applications for generic terrain feature information, such as mounts and non-mounts, are presented.

AN (1) AD-A259 062/XAG

FG (2) 170703

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) En Route Air Traffic Controllers ' Use of Flight Progress strips: A Graph-Theoretic Analysis.

DN (9) Final rept.

AU (10) Vortac, O. U.

Edwards, Mark B.

Jones, Judi P.

Manning, Carol A.

Rotter, A. J.

RD (11) Nov 1992

PG (12) 18 Pages

RS (14) DOT/FAA/AM-92/31

CT (15) DTFA02-91-C-9108

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *DATA MANAGEMENT, *FLIGHT RECORDERS, *GRAPHS

AIR, AIR TRAFFIC, AIRCRAFT, ATTENTION, AUTOMATION, CONTROL, FLIGHT, MANAGEMENT, NETWORKS, PAPER, STRIPES, TIME, TRAFFIC, TRANSITIONS, UNITED STATES, WRITING

AB (27) In the United States, flight data are represented on a paper Flight Progress Strip (FPS). The role of the FPS has recently attracted attention because of plans to automate this aspect of air traffic control. The communication activities and FPS activities of air traffic controllers were categorized while they controlled air traffic of varying complexity. Transition networks were derived from the empirical transitions. These networks indicated that several aspects of air traffic control generalize across complexity, including the centrality of writing-on-the-FPSs to the control of traffic. Complexity was a factor when FPSs were used with high complexity traffic situations, requiring the controller to direct uninterrupted periods of time to the management of the FPSs rather than integrating these board management responsibilities with the responsibilities of separating aircraft... Automation, Air traffic control.

AN (1) AD-A259 249/XAG

FG (2) 170703

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Comparison of Performance on the Shipley Institute of Living Scale, Air Traffic Control Specialist Selection Test, and FAA Academy Screen.

DN (9) Final rept.

AU (10) Della Rocco, Pamela S.

Milburn, Nelda

Mertens, Henry W.

RD (11) Nov 1992

PG (12) 9 Pages

RS (14) DOT/FAA/AM-92/30

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *INTELLIGENCE, *AIR TRAFFIC CONTROL SYSTEMS

ARRIVAL, COGNITION, COMPARISON, CONTROL, CORRELATION, PERSONNEL MANAGEMENT, SCALE, SELECTION, SPECIALISTS, TEST AND EVALUATION, TRAFFIC, VOCABULARY

ID (25) Air traffic control, Intelligence, Selection

AB (27) This study was conducted to establish norms for ATCS personnel on a group test of intellectual functioning, the Shipley Institute of Living Scale (SILS), to screen subjects for future research on the effects of Air Traffic Control Specialist (ATCS) related stressors on complex task performance. The SILS provides both verbal (Vocabulary) and cognitive performance (Abstraction) measures of general intellectual functioning. The relationship between SILS and performance of ATCSs in the FAA Academy Nonradar Screen Program (NSP) was also assessed. ATCSs undergo a two-stage selection process: (a) the Office of Personnel Management (OPM) Air Traffic Control Specialist Battery and (b) the NSP, a nine-week performance-based screening course at the FAA Academy. The Shipley was administered to three entering groups of new hires (N=563) upon their arrival at the FAA Academy. SILS scores were converted to estimated WAIS- R Full Scale intelligence scores. The SILS measures were compared to scores (a) on the OPM selection battery and (b) in the NSP. SILS Total, Abstraction, and estimated WAIS-R scores were better predictors of NSP performance than were the SILS vocabulary Subtest scores. Moderate correlations were found between the final academy score and the SILS and OPM measures. ATCS applicants scored higher on the Abstraction Subtest than the Vocabulary Subtest. ATCSs tend to be above average in intelligence, and tests of cognitive performance tend to be better predictors of overall NSP performance than verbal measures. The normative data can serve as an effective general intelligence screen for subjects involved in ATCS-related research.

AN (1) AD-A259 253/XAG

**FG (2) 040200
170900**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Terminal Doppler Weather Radar (TDWR) Operational Test and Evaluation (OT and E) Integration Test Plan

AU (10) Hess, Eric

RD (11) Nov 1992

PG (12) 68 Pages

RS (14) DOT/FAA/CT-TN92/6

CT (15) DTFA01-89-C-00002

RN (18) XH-FAA

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR, *TERMINALS, *DOPPLER RADAR

FIELD TESTS, INTEGRATION, MANAGEMENT, OKLAHOMA, PERSONNEL, PHILOSOPHY,

RADAR, REQUIREMENTS, TEST AND EVALUATION, TRAINING, URBAN AREAS,

VERIFICATION, WEATHER

ID (25) TDWR, OT and E Integration

AB (27) The Terminal Doppler Weather Radar (TDWR) Operational Test and Evaluation (OT and E) Integration Test Plan provides the overall philosophy and approach to the TDWR OT and E Integration portion of Technical Field Test and Evaluation (TFT and E) to be conducted at the Federal Aviation Administration Aeronautical Center (FAAAC) in Oklahoma City, OK. This plan identifies the necessary support that is required to accomplish OT and E integration; test roles and responsibilities of personnel, training requirements, and overall schedule of activities. Th operational and integration requirements of the TDWR. These requirements are contained in a Test Verification Requirements Traceability Matrix (TVRTM).

AN (1) AD-A259 310/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Limited Production Precision Runway Monitor (PRM) Master Test Plan.

DN (9) Technical note

AU (10) Bratton, Thomas

RD (11) Nov 1992

PG (12) 41 Pages

RS (14) DOT/FAA/CT-TN92/23

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *MONITORS, *RUNWAYS

CONTRACTORS, MANAGEMENT, PHASE, PRECISION, PRODUCTION, TEST AND EVALUATION

AB (27) This Master Test Plan (MTP) establishes the basic framework to guide and direct the Limited Production (LP) Precision Runway Monitor (PRM) test program. This MTP explains the relationship between all test phases. It concerns the LP PRM system's readiness to be integrated into the National Airspace System (NAS). Sufficient detail is provided to define and direct the development of the next lower level of documentation. The MTP addresses the responsibilities of the LP PRM contractor and the Federal Aviation Administration (FAA)... Limited Production (LP), Precision Runway Monitor (PRM), Master test plan.

AN (1) AD-A259 594/XAG

**FG (2) 050900
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Comparison of Performance on the Shipley Institute of Living Scale, Air Traffic Control Specialist Selection Test, and FAA Academy Screen.

DN (9) Final rept.

AU (10) Della Rocco, Pamela S.

Milburn, Nelda

Mertens, Henry W.

RD (11) Nov 1992

PG (12) 9 Pages

RS (14) DOT/FAA/AM-92/20

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *CONTROL

ARRIVAL, COGNITION, CORRELATION, INTELLIGENCE, MANAGEMENT, PERSONNEL,

PERSONNEL MANAGEMENT, SCALE, SELECTION, SPECIALISTS, TEST AND EVALUATION, TRAFFIC, VOCABULARY

ID (25) SILS(Shipley Institute of Living Scale), ATCS(Air Traffic Control Specialist), Office of personnel management tests, Air traffic control, Intelligence tests, Selection

AB (27) This study was conducted to establish norms for ATCS personnel on a group test of intellectual functioning, the Shipley Institute of Living Scale (SILS), to screen subjects for future research on the effects of Air Traffic Control Specialist (ATCS) related stressors on complex task performance. The SILS provides both verbal (Vocabulary) and cognitive performance (Abstraction) measures of general intellectual functioning. The relationship between SILS and performance of ATCSs in the FAA Academy Nonradar Screen Program (NSP) was also assessed. ATCSs undergo a two-stage selection process: the Office of Personnel Management (OPM) Air Traffic Control Specialist Battery and the NSP, a nine-week performance-based screening course at the FAA Academy. The Shipley was administered to three entering groups of new hires (N=563) upon their arrival at the FAA Academy. SILS scores were converted to estimated WAISR Full Scale intelligence scores. The SILS measures were compared to scores on the OPM selection battery and in the NSP. SILS Total, Abstraction, and estimated WAISR scores were better predictors of NSP performance than were the SILS vocabulary Subtest scores. Moderate correlations were found between the final academy score and the SILS and OPM measures. ATCS applicants scored higher on the Abstraction Subtest than the Vocabulary Subtest. ATCSs tend to be above average in intelligence, and tests of cognitive performance tend to be better predictors of overall NSP performance than verbal measures. The

normative data can serve as an effective general intelligence screen for subjects involved in ATCS-related research.... Air traffic control, Intelligence, Selection.

AN (1) AD-A260 710/XAG

FG (2) 170703

010600

010309

010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Effect of TCAS Interrogations on the Chicago O'Hare ATCRBS System.

DN (9) Final rept.

AU (10) Wapelhorst, Leo

Pagano, Thomas

Van Dongen, John

RD (11) Nov 1992

PG (12) 43 Pages

RS (14) DOT/FAA/CT-92/22

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *COLLISION AVOIDANCE, *AIR TRAFFIC CONTROL SYSTEMS, *AVIATION SAFETY

AIR, AIRBORNE, AIRCRAFT, APPROACH, CONTROL, COMMERCIAL AVIATION,

DATA

LINKS, DOWNLINKS, FACILITIES, FLIGHT, FREQUENCY, INSTALLATION, MANAGEMENT, MONITORS, RADAR BEACONS, RECEIVERS, SEARCH RADAR, SECONDARY, SIGNALS, SURVEILLANCE, TERMINALS, TEST AND EVALUATION, TRANSITIONS, TRANSPORT, UPLINKS

ID (25) Secondary surveillance radar, ATCRBS(Air Traffic Control Radar Beacon System), DATAS(Data Link Test and Analysis System), TCAS(Traffic Alert and Collision Avoidance System), FAA(Federal Aviation Administration), SSR(Secondary Surveillance Radar), TRACON(Terminal Approach Control) facility, Chicago O'Hare Airport

AB (27) This reports documents the Federal Aviation Administration (FAA) data collection and analysis effort to investigate Secondary Surveillance Radar (SSR) problems encountered at the Chicago O'Hare Terminal Approach Control (TRACON) facility. The FAA has mandated the implementation of Traffic Alert and Collision Avoidance System (TCAS) II to the entire air transport fleet by December 31, 1993. To provide for the smooth and orderly implementation of TCAS II, the TCAS Transition Program has been established to accomplish these objectives. The FAA Technical Center Research Directorate for Aviation Technology,

ACD-320, conducted the investigation by developing the data collection system capability of the Data Link Test and Analysis System (DATAS). Two distinct capabilities were developed to monitor the uplink and downlink activity of the SSR system frequencies. The uplink data collection system is an airborne installation of DATAS on an FAA aircraft and test flights were conducted to obtain the uplink data. The downlink data collection system was installed at the ground radar facility to monitor the Air Traffic Control Radar Beacon System (ATCRBS) receiver signal for downlink analysis. Data results and analysis of both efforts are documented herein.

AN (1) AD-A262 138/XAG

FG (2) 040200

200300

050200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) International Aerospace and Ground Conference on Lightning and Static Electricity (15th) Held in Atlantic City, New Jersey on October 6 - 8, 1992. Addendum

AU (10) Glynn, Michael S.

RD (11) Nov 1992

PG (12) 313 Pages

RS (14) DOT/FAA/CT-92/20-ADD-1

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *LIGHTNING, *STATIC ELECTRICITY

AIRBORNE, CORONAS, COUPLINGS, ELECTRICITY, FLORIDA, INTERNATIONAL, MANAGEMENT, MAPPING, PROTECTION, SIMULATION, STANDARDS, STATICS,

TEST

AND EVALUATION, URBAN AREAS, REPORTS, METEOROLOGY, SYMPOSIA

AB (27) This report supplements the compilation of papers presented at the 1992 International Aerospace and Ground Conference on Lightning and Static Electricity, held at the Taj Mahal, Atlantic City, NJ, October 6-8, 1992. It includes papers concerning lightning phenomenology, lightning characterization, modeling and simulation, test criteria and techniques, and protection of both airborne and ground systems. This conference was sponsored by the Federal Aviation Administration Technical Center and the NICG, in concert with the Florida Institute of Technology. Phenomenology, Electromagnetics, Lightning standards, Mapping, Modeling P-static and corona, Coupling lightning simulation, Meteorological.

AN (1) AD-A257 891/XAG

FG (2) 140300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) High Capacity Voice Recorder (HCVR) Operational Test And Evaluation (OT And E) Integration Test Report

AU (10) Bell, Wayne

Colon, Andy

Lind, Edward

RD (11) Oct 1992

PG (12) 41 Pages

RS (14) DOT/FAA/CT-TN92/30

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *VOICE COMMUNICATIONS, *RECORDING SYSTEMS

CHANNELS, CONTROL CENTERS, DEPLOYMENT, LIMITERS, MANAGEMENT, AIR TRAFFIC CONTROL SYSTEMS, OFF THE SHELF EQUIPMENT, RADAR, TEST AND EVALUATION, TRAFFIC, VOLUME

ID (25) High capacity voice recorder (HCVR), Voice recording, Peak limiter, ACW-400A Voice recorder

AB (27) This report describes the Operational Test and Evaluation (OT and E) integration tests performed by ACW-400A on the High Capacity Voice Recorder (HCVR) equipment. This Commercial Off-The-Shelf (COTS) equipment is being acquired to replace existing 152-channel voice recorders currently in use at Air Route Traffic Control Centers (ARTCCs) and the New York Terminal Radar Approach Control (TRACON) Facility. Tests to verify FAA-P-2878 (Purchase Description) requirements were performed at the Federal Aviation Administration (FAA) Technical Center. Tests to verify NAS-SS-1000, Volume I, System Level Requirements, and Volume IV, Subsystem Level Requirements were performed at the Seattle ARTCC (the designated key test site). This equipment did not meet all FAA-P-2878 or NAS-SS-1000 requirements, primarily because it is COTS equipment and was not specifically designed to meet FAA requirements. The advantages of this equipment, however, outweigh the disadvantages, in the opinion of ACW-400A. The HCVR equipment is, therefore, recommended for deployment under the conditions cited in this report.

AN (1) AD-A257 892/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Upgrade Precision Runway Monitor (PRM) Operational Test And Evaluation (OT and E) Test Plan

AU (10) Astillero, Ricardo

Bratton, Thomas

Dudas, Charles

Livingston, Jeffrey

RD (11) Oct 1992

PG (12) 41 Pages

RS (14) DOT/FAA/CT-TN92/13

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *MONITORS, *RUNWAYS, *AIR TRAFFIC CONTROL SYSTEMS

ACCEPTANCE TESTS, ADDITION, AIR, AIR TRAFFIC, AIRPORTS,

CONFIGURATIONS,

CONTRACTORS, DOCUMENTS, ENVIRONMENTS, FACILITIES, FLOW,

INTEGRATION,

INTERFACES, MANAGEMENT, PERSONNEL, PRECISION, REQUIREMENTS,

SITES, TEST

AND EVALUATION, TRAFFIC, INSTRUMENT LANDINGS, NORTH CAROLINA,

PHASED

ARRAYS, ELECTRONIC SCANNERS, RADAR BEACONS, HIGH RESOLUTION,

DISPLAY

SYSTEMS

ID (25) Upgrade PRM OT and E RDU

AB (27) This document defines the Upgrade Precision Runway Monitor (Upgrade

PRM) operational and Integration tests that will be conducted at the

Federal Aviation Administration (FAA) Operational facilities. These

tests will be executed at Raleigh-Durham Airport (RDU) following the

Contractor Site Acceptance Test. The Upgrade PRM test configuration is

addressed in conjunction with the associated interfaces which will be

required to perform the testing in as near an operational environment

as possible. The Air Traffic (AT) Operational requirements and test

objectives are contained in this test plan. In addition to providing

requirements traceability, this plan contains a description of the

tests which will be executed, associated success criteria, roles and

responsibilities of test personnel, and the overall flow of activities

required for a successful test program.

AN (1) AD-A258 216/XAG

FG (2) 250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Low Density Radio Communications Link (LDRCL) Operational Test and Evaluation (OT and E) Integration and Operational Test Plan.

DN (9) Technical rept.

AU (10) Bell, Wayne E.

Melillo, Michael R.

Tran, Tuan A.

Warren, John

RD (11) Oct 1992

PG (12) 115 Pages

RS (14) DOT/FAA/CT-TN-92/4

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *RADIO EQUIPMENT, *RADIO LINKS

ACCEPTANCE TESTS, ANTENNAS, APPROACH, CHANNELS, DENSITY,

ENVIRONMENTS,

FACILITIES, INDUSTRIAL PLANTS, INTEGRATION, LOW DENSITY, MICROWAVES,

NEVADA, POLARIZATION, REQUIREMENTS, SITES, SPECIFICATIONS, TEST AND

EVALUATION, TEXAS, DIGITAL SYSTEMS, MULTIPLEXING, MICROWAVE

EQUIPMENT

ID (25) Microwave radio equipment, Antenna polarization, Channel capacity,

Digital multiplex equipment

AB (27) This plan addresses the Operational Test and Evaluation (OT and E)

integration testing of the Low Density Radio Communications Link

(LDRCL) equipment in the current National Airspace System (NAS)

environment. The approach and concept is to conduct integration tests

with appropriate NAS systems to verify that NAS requirements and LDRCL

specifications (FAA-E-2853) requirements have been satisfied. This will

be accomplished by conducting factory acceptance and site acceptance

tests at the contractor's facility in Richardson, Texas, and extensive

integration tests at the key sites of San Antonio, Texas; Scurry,

Texas; and Mina, Nevada.

AN (1) AD-A258 219/XAG

FG (2) 060400

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF

AVIATION

MEDICINE

TI (6) Validity of Clinical Color Vision Tests for Air Traffic Control

Specialists.

DN (9) Final rept.

AU (10) Mertens, Henry W.
Milburn, Nelda J.
RD (11) Oct 1992
PG (12) 14 Pages
RS (14) DOT/FAA/AM-92/29
RN (18) XH-DOT/FAA/AM
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROLLERS, *COLOR VISION
AIR TRAFFIC, AIRCRAFT, CONTROL, DATA BASES, ERRORS, FACILITIES, FALSE
ALARMS, FLIGHT, INDICATORS, JOBS, LIGHT, METEOROLOGICAL RADAR,
OPERATION, PERFORMANCE TESTS, PREDICTIONS, RADAR, RATES, SIGNAL
LIGHTS,
SIMULATION, SPECIALISTS, STANDARDS, STATIONS, TERMINALS, TEST AND
EVALUATION, VALIDATION, WARNING SYSTEMS, WEATHER
AB (27) An experiment on the relationship between aeromedical color vision
screening test performance and performance on color-dependent tasks of
Air Traffic Control Specialists was replicated to expand the data base
supporting the job-related validity of the screening tests. The
original experiment (Mertens, 1990; n=108), and the replication (n=136)
involved a total of 121 normal trichromats, 31 simple and 44 extreme
anomalous trichromats, and 48 dichromats; both protans and deutans were
included. The simulations of ATCS color tasks which served as
validation criteria were flight progress strips (en route centers),
aircraft lights and the Aviation Signal Light indicator (ATC terminal
operations), and color weather radar (flight service station and en
route center facilities). The validities (Kappa) of aeromedical
screening tests ranged from 0.44 to 0.91 for prediction of error-free
performance on all color dependent tasks. The aeromedical screening
tests were generally acceptable in terms of selecting individuals who
did not make errors, but several tests had high false alarm rates. The
high job-related validity of several aeromedical color vision tests was
confirmed. Air Traffic Controllers, Color Vision Standards, Performance
Tests, Color Vision Tests.

AN (1) AD-A258 594/XAG

FG (2) 070400

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**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC
CITY NJ**

TI (6) Vapor to Liquid Ratio Test as an Indicator of Volatility.

DN (9) Technical note

AU (10) Zemel, Marc
RD (11) Oct 1992
PG (12) 11 Pages
RS (14) DOT/FAA/CT-TN92/40
RN (18) XH-DOT
RC (20) Unclassified report
DE (23) *LIQUIDS, *RATIOS, *VAPOR PRESSURE, *VOLATILITY
ETHANOLS, FUELS, GASOLINE, INDICATORS, LABORATORIES, MIXTURES,
MOTORS,
PRESSURE, TEST AND EVALUATION, VAPORS, ADDITIVES, EMISSION,
AIRCRAFT
ENGINES, THERMODYNAMICS
ID (25) RVP, Reid vapor pressure, Gasohol
AB (27) A laboratory study on the effects of adding ethanol to motor fuel was
performed. This technical note presents the results of Reid vapor
pressure and vapor to liquid ratio tests performed on the blended
fuels. Increased volatility problems with ethanol blends were
uncovered, particularly at 10 to 15 percent ethanol. The investigation
also showed how vapor to liquid ratio tests can be useful in areas
where Reid vapor pressure data are inconclusive.

AN (1) AD-A258 762/XAG

FG (2) 010600

050300

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC
CITY NJ**

**TI (6) A NASPAC-Based Analysis of the Delay and Cost Effects of the
Dallas/Fort Worth Metroplex Plan.**

DN (9) Technical note

AU (10) Richie, Joseph M.

Baart, Douglas

Pomerantz, Arthur

RD (11) Oct 1992

PG (12) 81 Pages

RS (14) DOT/FAA/CT-TN-92/21

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT, *COSTS, *DELAY

PASSENGERS, PLANNING, REGIONS, SAVINGS, SCENARIOS, TRAFFIC

ID (25) METROPLEX Plan, NASPAC, Operational delay, Passenger delay, Technical
note, DFW(Dallas/Fort Worth(Texas)), Metroplex plan, Local aviation
delays, System-wide aviation delays, NASPAC(National Airspace System
Perormance Analysis Capability), Cost savings

AB (27) This technical note contains the findings and analysis of the effects of the Dallas/ Fort Worth (DFW) Metroplex Plan on local and system-wide traffic delays. The National Airspace System Performance Analysis Capability (NASPAC) was used to perform this task, and calculates the local (DFW) and system-wide delays with and without the Metroplex Plan. Cost savings were derived using the cost of delay module based on these delays, on passenger cost, and on airline and aircraft specific cost. The results indicate that the plan will reduce delay in the years 1995, 2000, and 2005 at DFW and system-wide for all scenarios modeled. The Southwest Region will be using these results in its planning efforts to execute the Metroplex Plan....

AN (1) AD-A260 010/XAG

FG (2) 170703

250100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) FAA Technical Center Aeronautical Data Link Research Plan.

DN (9) Final rept. Oct 91-Sep 92.

RD (11) Oct 1992

PG (12) 60 Pages

RS (14) DOT/FAA/CT-92/23

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *DATA LINKS, *AIR TRAFFIC CONTROLLERS

CONFIGURATIONS, EFFICIENCY, FLIGHT CREWS, IMPACT, INTEGRATION, MANAGEMENT, METHODOLOGY, PRODUCTIVITY, RESEARCH AIRCRAFT,

SAFETY,

SIMULATION, TIME, HUMAN FACTORS ENGINEERING

AB (27) The purpose of this plan is to project a clear and distinct description of the Data Link research that is to be conducted at the Federal Aviation Administration (FAA) Technical Center over the next 4 years. It explicitly defines what is to be achieved at a specific time in the future. End-to-end, high fidelity simulations will be the primary methodology for answering research questions. The end-to-end simulations identified in this plan are intended to investigate controller/aircrew integration issues using candidate Data Link hardware and software configurations. Research will also focus on testing Data Link applications in terms of their impact on controllers, aircrew, and the overall safety, efficiency, and productivity of the system. Additionally, research efforts are planned to address the most critical human factors issues surrounding Data Link.... Data Link, Research Plan.

AN (1) AD-A257 219/XAG

FG (2) 250500

040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Weather Message Switching Center Replacement (WMSCR) Operational Test and Evaluation (OT and E)/Integration Test Plan.

DN (9) Technical note

AU (10) Mackuse, Frances A.

Benner, William

Varani, Maureen

RD (11) Sep 1992

PG (12) 94 Pages

RS (14) DOT/FAA/CT-TN90/59

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *TELECOMMUNICATIONS, *WEATHER, *AIR TRAFFIC CONTROL SYSTEMS, *COMMUNICATIONS NETWORKS

ADDITION, AIR, AIR TRAFFIC, CONTROL, DISTRIBUTION, ENVIRONMENTS, FACILITIES, FLIGHT, FUNCTIONS, GEORGIA, INTERFACES, KANSAS, LAKES, MANAGEMENT, MISSOURI, NETWORKS, NODES, OPERATION, PROCESSING, REPLACEMENT, REQUIREMENTS, SALTS, SITES, STATIONS, STORES,

SWITCHING,

TRAFFIC, URBAN AREAS, UTAH, VIRGINIA

ID (25) National airspace data interchange, Network (NADIN), WMSCR, NWSTG, NWID

AB (27) The Weather Message Switching Center Replacement (WMSCR) will serve as the Federal Aviation Administration (FAA) gateway for the receipt and distribution of weather data and Notice to Airmen (NOTAM) within the National Airspace System (NAS). In December 1981, the FAA chartered a comprehensive NAS Plan for modernizing and improving air traffic control (ATC) and airway facilities through the year 2000. As part of the NAS Plan in 1983, the Air Traffic Service operation and requirements for the WMSCR were published. The purpose of the WMSCR system is to replace the current Weather Message Switching Center (WMSC) system in Kansas-City, Missouri. It will support all functions related to weather processing presently performed by the WMSC. In addition, the WMSCR will collect NOTAMs from the Automated Flight Service Station (AFSS) environment for processing by the Consolidated NOTAM System Processor (CNSP) and will store and distribute the processed NOTAMs received from the CNSP. The WMSCR will be comprised of two identical nodes and the National Weather Service Telecommunications Gateway (NWSTG) WMSCR Interface Device (NWID). The nodes will be

located at the National Aviation Weather Processing Facility (NAWPF) sites at Salt Lake City, Utah and at Atlanta, Georgia. The NWID will be located at Leesburg Virginia. Each node will have the capability of servicing the entire geographical airspace system 24 hours a day, 7 days a week.

AN (1) AD-A257 658/XAG
FG (2) 010500
050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT

PLANNING AND PROGRAMMING

TI (6) Estimating the Regional Economic Significance of Airports

AU (10) Butler, Stewart E.
Kiernan, Laurence J.

RD (11) Sep 1992

PG (12) 63 Pages

RS (14) DOT/FAA/PP-92-6

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *AIRPORTS, *ECONOMIC IMPACT

ESTIMATES, BENEFITS, AVIATION PERSONNEL, EMPLOYMENT, PASSENGERS,

LOCAL

GOVERNMENT

AB (27) The United States has the world's most extensive airport system. The system is essential to national transportation, and there is a large Federal investment in it. However, most public airports are owned and operated by units of local government. Public airports must compete for funds with other governmental activities. They are scrutinized during budget preparation and may be the subject of public debate, particularly if major improvements or new construction are anticipated. They may even be the target of proposed restrictions aimed at limiting aircraft noise levels. In such instances, the future of an airport is determined primarily through the local political process. It is important that the public and their representatives appreciate the economic significance of airports if they are to continue to support them. This report is designed to assist analyses of the economic importance of airports. It is not intended for use in financial feasibility studies or cost/benefit analyses. Rather, it provides information that the average citizen may find useful when the current and future role of an airport is being discussed. One objective is to encourage a standard approach to the measurement of the economic significance of airports.

AN (1) AD-A258 593/XAG

FG (2) 250200
170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A Simulation Study of the Effects of Communication Delay on Air Traffic Control.

DN (9) Final rept. Nov 89-Aug 90

AU (10) Nadler, Eric D.

DiSario, Robert

Mengert, Peter

Sussman, E. D.

Spanier, Gerard

RD (11) Sep 1992

PG (12) 168 Pages

RS (14) DOT-VNTSC-FAA-90-5, DOT-VNTSC-FAA/CT-90/6

RN (18) DOT/FAA/CT-90/6

XH-DOT

RC (20) Unclassified report

DE (23) *DELAY, *SATELLITE COMMUNICATIONS, *VOICE COMMUNICATIONS, *AIR TRAFFIC

CONTROL SYSTEMS

ARTIFICIAL SATELLITES, CONTROL CENTERS, IMPACT, MANAGEMENT,

RECORDS,

SCENARIOS, SIMULATION, SWITCHING, TELECOMMUNICATIONS, VALUE,

WORKLOAD

ID (25) Air traffic control, Telecommunications, ATC Simulation, communication delay

AB (27) This study was conducted to examine the impacts of voice communications delays characteristic of Voice Switching and Control System (VSCS) and satellite communications systems on air traffic system performance, CONTROLLER stress and workload, and communications disruptions. To accomplish this a simulation was developed and performed at the Federal Aviation Administration (FAA) Technical Center. The simulation used scenarios constructed from records of Live air traffic at five adjacent Atlanta Air Route Traffic Control Center (ARTCC) sectors. Nine full performance level air traffic control specialists from the Atlanta ARTCC sectors simulated participated as subjects. Four delay levels were employed corresponding to: current equipment with and without satellite Link, and VSCS with and without satellite Three Levels of communications workload were used based on 70 percent, 90 percent, and 110 percent of reference values for the actual sectors. VSCS delays

were not found to have any statistically significant impact on any measure. Satellite delays were found to be associated with a statistically significant increase in one kind of communication disruption (step-ons) at the highest level of communications workload used in the study.

AN (1) AD-A260 011/XAG

FG (2) 010200

120400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) ILS Mathematical Modeling Study of the Effects of an ASR-9 Structure at the Long Island MacArthur Airport, Islip, New York, Runway 24.

DN (9) Technical note for period ending Jun 92

AU (10) Rambone, James D.

RD (11) Sep 1992

PG (12) 25 Pages

RS (14) DOT/FAA/CT-TN92/25

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS, *MATHEMATICAL MODELS

AIRPORTS, ANTENNAS, CLEARANCES, CONSTRUCTION, DIPOLE ANTENNAS, DIPOLES,

FREQUENCY, INTERFERENCE, LEVELS(INSTRUMENTS), LINEARITY, MANAGEMENT,

ORBITS, RADIO EQUIPMENT, REFLECTION, REGIONS, RUNWAYS, SIGNALS, SITES,

STRUCTURES, ANTENNA ARRAYS

ID (25) Physical optics

AB (27) This Technical Note describes the instrument landing system (ILS) math modeling performed by the Federal Aviation Administration (FAA)

Technical Center at the request of the Eastern Region. Computed localizer data are presented showing the effects of an ASR-9 antenna

structure proposed for construction on the performance of an ILS

localizer serving runway 24 at the Long Island MacArthur Airport. The

ASR-9 antenna structure was modeled at four proposed sites. The Eastern

Region is concerned that radio frequency signal reflections from the

ASR-9 structure may degrade the localizer course. Modeled course

structure results indicate that Category I localizer performance should

be maintained with the Wilcox 8-element log periodic dipole antenna

with the ASR-9 structure constructed at any of the proposed locations.

The ASR-9 structure provided minimal signal interference at each site

modeled. Computed clearance orbit results indicate satisfactory

linearity, course crossover, and signal clearance levels.... Instrument Landing System Math Modeling, ILS, ILS Localizer.

AN (1) AD-A334 384/XAG

FG (2) 110400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Proceedings of the Ninth DoD/NASA/FAA Conference on Fibrous Composites in Structural Design, Held in Lake Tahoe, Nevada on November 4-7, 1991.

Volume 2.

DN (9) Proceedings 4-7 Nov 91

AU (10) Soderquist, Joseph R.

Neri, Lawrence M.

Bohon, Herman L.

RD (11) Sep 1992

PG (12) 589 Pages

RS (14) DOT/FAA/CT-92/25-VOL-2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COMPOSITE MATERIALS, *COMPOSITE STRUCTURES, *AIRCRAFT DESIGN FIBERS, SYMPOSIA, DAMAGE, TOLERANCE, DESIGN CRITERIA, STRUCTURAL ENGINEERING

ID (25) *FIBROUS COMPOSITES, COMPOSITE AIRCRAFT DESIGN, COMPOSITE DESIGN

APPLICATIONS, NASA ADVANCED COMPOSITE TECHNOLOGY

AB (27) This publication contains the proceedings of the Ninth DoD/NASA/FAA

conference on Fibrous Composites in Structural Design held at Lake

Tahoe, Nevada, during November 4-7, 1991. Presentations were made in

the following areas of composite structural design: perspectives in

composites, design methodology, design applications, design criteria,

supporting technology, damage tolerance, and manufacturing.

AN (1) AD-A255 754/XAG

FG (2) 010600

230600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Seating Configuration and Number of Type III Exits on Emergency Aircraft Evacuation.

DN (9) Final rept.

AU (10) McLean, G. A.

Chittum, C. B.
Funkhouser, G. E.
Fairlie, G. W.
Folk, E. W.

RD (11) Aug 1992

PG (12) 17 Pages

RS (14) DOT/FAA/AM-92/27

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *EMERGENCIES, *EXITS, *AVIATION SAFETY

AIRCRAFT, CONFIGURATIONS, CONFLICT, EVACUATION, FLOW RATE,
OPTIMIZATION, PASSENGERS, PLUGS, RATES, REMOVAL, RESEARCH

FACILITIES,

SEATS, WIDTH

ID (25) Type III exits, Emergency exits, Seat pitch, Egress

AB (27) An increase in the required pathway width from aircraft center aisles to Type III overwing exits is being weighed by the FAA. To augment the analysis, an examination of seat/exit configuration effects on simulated emergency egress was conducted in the CAMI Evacuation Research Facility. METHODS. Four subject groups traversed four different seat/exit configurations in a counter-balanced, repeated-measures design. Pathway width was modified by altering seat pitch. RESULTS. In single-exit trials the fastest times and highest flow-rates occurred with a 20 pathway between triple seats or a 10 pathway between double seats. Double exits produced 36% shorter egress times ($p < .007$), although flow-rates declined 11% and exit Plug removal times increased 32%, compared to single exits. Efficient egress requires optimization of the space around the exit. Generally, wider pathways and fewer obstructions enhance this process; however, when available space exceeds individual passenger needs, conflicts may be produced which inhibit egress. Emergency Evacuations, Type III Exits, Seat Pitch, Egress.

AN (1) AD-A255 794/XAG

FG (2) 060400
230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Performance of Color-Dependent Tasks of Air Traffic Control Specialists
as a Function of Type and Degree of Color Vision Deficiency.

DN (9) Final rept.

AU (10) Mertens, Henry W.

Milburn, Nelda J.

RD (11) Aug 1992

PG (12) 17 Pages

RS (14) DOT/FAA/AM-92/28

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *COLOR VISION, *VISUAL PERCEPTION

CLASSIFICATION, COLOR CODING, COLORS, CONTROL, DATA BASES,
DEFICIENCIES, ERRORS, FLIGHT, INDICATORS, LIGHT, MEAN,

METEOROLOGICAL

RADAR, OPERATION, PERFORMANCE TESTS, PERSONNEL, REQUIREMENTS,

SIGNAL

LIGHTS, SIMULATION, SPECIALISTS, STANDARDS, TERMINALS, TEST AND
EVALUATION, TOWERS, WORK, PERFORMANCE(HUMAN), RADAR IMAGES

AB (27) This experiment was conducted to expand initial efforts to validate the

requirement for normal color vision in Air Traffic Control Specialist (ATCS) personnel who work at en route center, terminal, and flight service station facilities. An enlarged data base was developed involving 121 individuals with normal color vision, 31 simple and 44 extreme anomalous trichromats, and 48 dichromats; both protans and duetans were included. The performance of subjects with normal color vision was compared with the performance of individuals in various classifications of color vision deficiency on a battery of color-dependent ATCS tasks. Simulations of the ATC color tasks concerned color coding in flight progress strips (at en route centers), aircraft lights and Aviation Signal Light indicator (in tower operations), and color weather radar (at flight service stations). Errors were rare among normal trichromats. Mean errors were significantly higher at every level (degree) of color vision deficiency than in normals. Approximately 6 percent of color deficient subjects were able to perform ATC color tasks without error. The six percent were all from the simple anomalous trichromat category; all extreme anomalous trichromats and dichromats were prone to error on ATC tasks. These findings provide support for the requirement of normal color vision in initial medical screening of ATCS personnel. Air Traffic Controllers, Color Vision Standards, Performance Tests, Color Vision Tests.

AN (1) AD-A255 944/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Identifying Ability Requirements for Operators of Future Automated Air Traffic Control Systems.

DN (9) Final rept.

AU (10) Manning, Carol A.
Broach, Dana

RD (11) Aug 1992

PG (12) 31 Pages

RS (14) DOT/FAA/AM-92/26

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS

AIR, AIR TRAFFIC, AUTOMATION, CONTROL, IDENTIFICATION, IMPACT, JOBS, REQUIREMENTS, SELECTION, TRAFFIC

AB (27) This study was conducted to anticipate the impact on air traffic controller ability requirements that may result from implementation of a future stage of air traffic control automation. If important changes occur in ability requirements, it will be necessary to develop or modify selection procedures for future air traffic controllers. Accurate identification of ability requirements depends on knowledge of the job tasks to be performed, but only general information is currently available about the job tasks associated with later stages of air traffic control automation. In this study, nine air traffic controllers who had analyzed operational requirements for a future stage of automation (a) described how controllers would perform four job tasks using the automation, (b) assessed the degree to which nine specific abilities were likely to be required to perform the automated tasks, and (c) assessed whether the amount of each ability required to perform the automated tasks would be different than the amount of the ability required to perform the equivalent tasks in the current system.

AN (1) AD-A256 614/XAG

FG (2) 010200

060400

140400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Performance of Color-Dependent Tasks of Air Traffic Control Specialists as a Function of Type and Degree of Color Vision Deficiency.

DN (9) Final rept.

AU (10) Mertens, Henry W.
Milburn, Nelda J.

RD (11) Aug 1992

PG (12) 18 Pages

RS (14) DOT/FAA/AM-92/28

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *COLOR CODING, *COLOR VISION

AIR TRAFFIC, AIRCRAFT, CLASSIFICATION, CODING, COLORS, CONTROL, DATA BASES, DEFICIENCIES, DOCUMENTS, ERRORS, FACILITIES, FLIGHT, INDICATORS,

LIGHT, MEAN, METEOROLOGICAL RADAR, OPERATION, PERFORMANCE TESTS, PERSONNEL, RADAR, REQUIREMENTS, SIGNAL LIGHTS, SIGNALS, SIMULATION, SPECIALISTS, STANDARDS, STATIONS, TERMINALS, TEST AND EVALUATION, TOWERS, TRAFFIC, VIRGINIA, VISION, WEATHER, WORK

ID (25) ATCS(Air Traffic Control Specialist), LPN-FAA-AMC-88-90-HRR-107

AB (27) This experiment was conducted to expand initial efforts to validate the requirement for normal color vision in Air Traffic Control Specialist (ATCS) personnel who work at en route center, terminal, and flight service station facilities. An enlarged data base was developed involving 121 individuals with normal color vision, 31 simple and 44 extreme anomalous trichromats, and 48 dichromats; both protans and deuterans were included. The performance of subjects with normal color vision was compared with the performance of individuals in various classifications of color vision deficiency on a battery of color-dependent ATCS tasks. Simulations of the ATC color tasks concerned color coding in flight progress strips (at en route centers), aircraft lights and Aviation Signal Light indicator (in tower operations), and color weather radar (at flight service stations). Errors were rare among normal trichromats. Mean errors were significantly higher at every level (degree) of color vision deficiency than in normals. Approximately 6 percent of color deficient subjects were able to perform ATC color tasks without error. The six percent were all from the simple anomalous trichromat category; all extreme anomalous trichromats and dichromats were prone to error on ATC tasks. These findings provide support for the requirement of normal color vision in initial medical screening of ATCS personnel. Air Traffic Controllers Document is available to the public Color Vision Standards through the National Technical Performance Tests Information Service, Springfield, Color Vision Tests Virginia 22161.

AN (1) AD-A256 615/XAG

FG (2) 170703

050900

130800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Identifying Ability Requirements for Operators of Future Automated Air Traffic Control Systems.

DN (9) Final rept.

AU (10) Manning, Carol A.
Broach, Dana

RD (11) Aug 1992

PG (12) 27 Pages

RS (14) DOT/FAA/AM-92/26

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *AUTOMATION

AIR TRAFFIC, CONTROL, IDENTIFICATION, IMPACT, INTERACTIONS, JOBS, REQUIREMENTS, SELECTION, TIME, TRAFFIC

ID (25) LPN-FAA-AM-C-92-HRR-136

AB (27) This study was conducted to anticipate the impact on air traffic controller ability requirements that may result from implementation of a future stage of air traffic control automation. If important changes occur in ability requirements, it will be necessary to develop or modify selection procedures for future air traffic controllers. Accurate identification of ability requirements depends on knowledge of the job tasks to be performed, but only general information is currently available about the job tasks associated with later stages of air traffic control automation. In this study, nine air traffic controllers who had analyzed operational requirements for a future stage of automation (a) described how controllers would perform four job tasks using the automation, (b) assessed the degree to which nine specific abilities were likely to be required to perform the automated tasks, and (c) assessed whether the amount of each ability required to perform the automated tasks would be different than the amount of the ability required to perform the equivalent tasks in the current system. The controllers thought that some changes will occur in the presentation of information, much of the requirement for verbal coordination will be removed, and much of the detailed information that the controller must be present will be supplanted by automation aids. At the same time, these controllers suggested that the future controller will have to have about the same levels as required today of the abilities discussed in the study to perform the tasks included in the study. Selection, Air Traffic Control, Ability Requirements Automation, Air Traffic Control.

AN (1) AD-A256 616/XAG

FG (2) 150200

050900

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Seating Configuration and Number of Type III Exits on Emergency Aircraft Evacuation.

DN (9) Final rept.

AU (10) McLean, Garnet A.

Chittum, Charles B.

Funkhouser, Gordon E.

Fairlie, Gregory W.

Folk, Earl W.

RD (11) Aug 1992

PG (12) 27 Pages

RS (14) DOT/FAA/AM-92/27

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *CONFIGURATIONS, *EVACUATION, *EXITS, *PASSENGERS

AIRCRAFT, CONFLICT, COUNTERS, EMERGENCIES, FACILITIES, FLOW, FLOW RATE,

OPTIMIZATION, PLUGS, RATES, REMOVAL, RESEARCH FACILITIES, SEATS, WIDTH,

AIRCRAFT SEATS, CONFIGURATION MANAGEMENT

ID (25) LPN-FAA-AM-B-91-PRS-82, Aircraft passages, Seat/exit configuration, Pathway widths, Emergency evacuations, Type 2, Exits, Seat pitch egress

AB (27) An increase in the required pathway width from aircraft center aisles to Type III overwing exits is being weighed by the FAA. To augment the analysis, an examination of seat/exit configuration effects on simulated emergency egress was conducted in the CAMI Evacuation Research Facility. Four subject groups traversed four different seat/exit configurations in a counter-balanced, repeated-measures design. Pathway width was modified by altering seat pitch. In single-exit trials the fastest times and highest flow-rates occurred with a 20 pathway between triple seats or a 10 pathway between double seats. Double exits produced 36% shorter egress times ($p < .007$), although flow-rates declined 11% and exit plug removal times increased 32%, compared to single exits. Efficient egress requires optimization of the space around the exit. Generally, wider pathways and fewer obstructions enhance this process; however, when available space exceeds individual passenger needs, conflicts may be produced which inhibit egress. Emergency Evacuations, Type III Exits, Seat Pitch,

Egress.

AN (1) AD-A257 696/XAG

FG (2) 170703

150400

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS ENGINEERING

SERVICE

TI (6) A Description of the Mode Select Beacon System (Mode S) and Its Associated Benefits to the National Airspace System (NAS).

DN (9) Final rept.

AU (10) Hodgkins, P. D.

RD (11) Aug 1992

PG (12) 42 Pages

RS (14) DOT/FAA/SE-92/6

RN (18) XH-DOT/FAA/SE

RC (20) Unclassified report

DE (23) *DATA LINKS, *RADAR BEACONS, *SURVEILLANCE, *AIR TRAFFIC CONTROL SYSTEMS

AIR TRAFFIC, BEACONS, BENEFITS, DEFICIENCIES, IMMUNITY, INSTALLATION, INTERFERENCE, INTERROGATORS, OPERATION, REDUCTION, SENSITIVITY, TRANSPONDERS

ID (25) Mode S beacon system, Surveillance, Data link, NAS(National Airspace System)

AB (27) This report provides a historical perspective and technical description to clarify the background and benefits of the mode select beacon system (Mode S). First, a brief synopsis of the development of the Mode S surveillance function is given in Section 2.0. Section 3.0 provides an overview of the operation of both ATCRBS and Mode S systems to highlight their operational differences. Section 4.0 discusses benefits which will be realized solely as a consequence of Mode S ground sensor installation. Section 5.0 describes how Mode S ground sensor installations provide immunity to synchronous garble and other ATCRBS deficiencies, and describes the advantages realized as a result of near-universal Mode S transponder equipage. The Mode S data link function is described in Section 6.0. This report describes the operation of the Mode S subsystem and identifies benefits that the Mode S system provides to the National Airspace System (NAS) for surveillance and data link operations. These benefits include a reduction in asynchronous interference, reduced sensitivity to synchronous garble, and more accurate and reliable surveillance, and support of air-ground data link operations. This report addresses the

benefits of using the mode select (Mode S) beacon system as an alternative for replacement of existing air traffic control beacon interrogators.

AN (1) AD-A253 859/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SURVEILLANCE OFFICE

TI (6) Summary of Findings from the PIREP-Based Analyses Conducted during the 1988 to 1990 Evaluations of TDWR-Based and TDWR/LLWAS-Based Alert Services Provided to Landing/Departing Pilots.

DN (9) Final rept. Mar 88-Aug 91

AU (10) Stevenson, Lloyd

RD (11) Jul 1992

PG (12) 59 Pages

RS (14) DOT-VNTSC-FAA-91-15, DOT/FAA/NR/92-6

RC (20) Unclassified report

DE (23) *METEOROLOGICAL RADAR, *AIRCRAFT LANDINGS

ACCURACY, CONTROL, INTENSITY, LANDING, LOW LEVEL, MANAGEMENT, OBSERVATION, PHASE, PILOTS, RADAR, RADIO EQUIPMENT, STARTING, TERMINALS, THUNDERSTORMS, WEATHER, WIND, WIND SHEAR, DOPPLER RADAR,

LANDING AIDS, WEATHER FORECASTING

ID (25) Microbursts

AB (27) The Federal Aviation Administration (FAA) is developing the Terminal Doppler Weather Radar (TDWR). Starting in 1988, the TDWR Program conducted a series of evaluations of a TDWR-based alert service to provide wind shear and microburst alerts to landing and departing pilots. Starting in 1989, a second series of evaluations was initiated involving an integrated alert service consisting of TDWR and the Phase III Low Level Wind Shear Alert System (LLWAS). Evaluations are expected to continue through 1992. The radio communications between Local Control and (landing and departing pilots were analyzed for 224 of the 323 alert periods that occurred during the 1999 through 1990 and represents one component of the overall investigation that took place. A key element of the communications were the pilot reports (PIREPs) of weather-related encounters and observations made during the alert periods. PIREPs were used to: (a) evaluate the accuracy of the issued alerts from the pilot's viewpoint as to the Location and intensity of the wind-related encounters, and (b) identify situations in which pilots reported wind-related encounters that were not provided alert coverage. Doppler weather radar, Terminal doppler weather radar, TDWR, Low level wind shear alert system, LLWAS, Microbursts, Wind shear

thunderstorms.

AN (1) AD-A254 409/XAG

FG (2) 010500

150500

120700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) GNAS Maintenance Control Center (GMCC) Design Qualification Test and Evaluation (DQT and E) Test Report.

DN (9) Technical note

AU (10) Van Suetendaal, Richard

RD (11) Jul 1992

PG (12) 138 Pages

RS (14) DOT/FAA/CT-TN91/39

RC (20) Unclassified report

DE (23) *MAINTENANCE MANAGEMENT, *LOCAL AREA NETWORKS, *COMPUTER PROGRAMS

AIRPORTS, CONFIGURATIONS, CONTROL, CONTROL CENTERS, INTERNATIONAL

AIRPORTS, MAINTENANCE, MONITORING, NEW JERSEY, QUALIFICATIONS, REQUIREMENTS, TEST AND EVALUATION, URBAN AREAS, SOFTWARE ENGINEERING, VERIFICATION

ID (25) Design criteria

AB (27) This report presents the results of Design Qualification Test and Evaluation (DQT and E) testing of the General National Airspace System (GNAS) Maintenance Control Center (GMCC). As Test Director, ACN-250 conducted testing at the Federal Aviation Administration (FAA) Technical Center, Atlantic City International Airport, New Jersey. The purpose of DQT and E testing is to verify that the phase I and phase II GMCC design requirements are met. The requirements were successfully demonstrated with some minor problems. However, due to an incomplete test configuration, ACN-250 recommended retesting the system with a four GMCC network. General National Airspace System (GNAS), Maintenance Control Center (MCC), Remote Maintenance Monitoring, System (RMMS), Maintenance Management System (MMS).

AN (1) AD-A254 550/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Identification and Quantitation of Triamterene in Blood and Urine from a Fatal Aircraft Accident.

DN (9) Final rept.

AU (10) White, Vicky L.

Canfield, Dennis V.

Hordinsky, Jerry R.

RD (11) Jul 1992

PG (12) 7 Pages

RS (14) DOT/FAA/AM-92/23

RC (20) Unclassified report

DE (23) *DIURETICS, *EFFICIENCY, *HYPERTENSION, *CRASH LANDINGS ACCIDENTS, AIRCRAFT, AVIATION ACCIDENTS, BLOOD, CHROMATOGRAPHY, DRUGS,

EXTRACTION, GAS CHROMATOGRAPHY, IDENTIFICATION, LIQUID CHROMATOGRAPHY,

LIQUIDS, SOLVENTS, STANDARDS, THIN LAYER CHROMATOGRAPHY, URINE

ID (25) *Triamterene

AB (27) Triamterene, a diuretic drug used in combination with other drugs for the treatment of hypertension, was found in the blood and urine of a fatal aircraft accident victim. The extraction and identification of triamterene is difficult. It exhibits poor extraction efficiency using some standard base extraction procedures and the parent drug is unsuitable for analysis using gas chromatography. In this case a thin layer chromatography solvent system and high performance liquid chromatography were used to identify and quantitate triamterene in blood and urine. Triamterene is a strong absorber in the ultraviolet region and has an unusual UV spectrum, which simplifies the identification and quantitation of this substance by High Performance Liquid Chromatography. Triamterene, HPLC, TLC, Extraction.

AN (1) AD-A254 640/XAG

FG (2) 170703

201400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Effect of Guard Band Reduction on Marker Beacon Receiver Performance.

DN (9) Technical note

AU (10) Badinelli, Martin

Barto, Sam

Cushman, Arthur

Truong, Y. V.

RD (11) Jul 1992

PG (12) 97 Pages
RS (14) DOT/FAA/CT-TN92/18
RC (20) Unclassified report
DE (23) *BEACONS, *INSTRUMENT LANDINGS, *INTERFERENCE, *MARKERS, *RECEIVERS
AIRCRAFT, AMPLITUDE, AMPLITUDE MODULATION, BODIES, CONTINUOUS WAVES,
EMITTERS, FREQUENCY, FREQUENCY MODULATION, LANDING, MANAGEMENT, MEASUREMENT, MODULATION, PULSE MODULATION, PULSES, REDUCTION, SIGNALS,
TEST AND EVALUATION
ID (25) Marker beacon receiver, Guard band reduction, Guard bands
AB (27) Aircraft Marker Beacon Receivers, which are a part of the Instrument Landing System, operate at a frequency of 75 megahertz (MHz) and until January 1, 1990, were protected by a guard band of +/- 400 kilohertz (kHz). After this date, the guard band was reduced to +/- 200 kHz. This report details testing performed at the Federal Aviation Administration (FAA) technical Center to assess the effect emitters, using this new guard band, will have on Marker Beacon Receivers. The effect of the interference on the Marker Beacon Receivers was determined by performing a desensitization test, a no-desired signal test, and a selectivity measurement on five general aviation Marker Beacon Receivers. For these tests, emitters that use amplitude modulation, frequency modulation, pulse modulation, and continuous wave were simulated. It was found that emitters using these new frequencies can cause interference to Marker Beacon Receivers. Recommendations for limiting the interference effect are provided in the body of the report.

AN (1) AD-A254 679/XAG

FG (2) 061500

070400

070300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Enhancement of Drug Detection and Identification by Use of Various Derivatizing Reagents on GC-FTIR Analysis.

DN (9) Final rept.

AU (10) Huffine, Edwin F.
Canfield, Dennis V.

RD (11) Jul 1992

PG (12) 8 Pages

RS (14) DOT/FAA/AM-92/25

RC (20) Unclassified report

DE (23) *DRUGS, *IDENTIFICATION, *SPECTROPHOTOMETRY, *DETECTION

ABSORPTION, ACIDS, AMIDES, AMINES, ANHYDRIDES, CARBON, CHROMATOGRAPHS,
FLUORINE, MATERIALS, MOLECULES, QUANTITY, SECONDARY, SENSITIVITY, TOXICOLOGY, CARBONYL COMPOUNDS, CHEMICAL BONDS, ANALYTICAL CHEMISTRY,
SYMPATHOMIMETIC AGENTS

ID (25) LPN-FAA-AM-B-91-TOX-66, *Derivatizing reagents, GC-FTIR(Gas Chromatograph-Fourier Transform Infrared), PPA(PhenylPropanolamine), HFAA(Heptafluorobutyric Acide Anhydride)

AB (27) Phenylpropanolamine (PPA) is a relatively common non-prescription sympathomimetic amine. As such, it is frequently detected during forensic analysis. The presence of phenylpropanolamine can be confirmed by using Gas Chromatograph-Fourier Transform Infrared (GC-FTIR) spectrophotometry. One constraint of the GC-FTIR is the quantity of material required to obtain a suitable IR spectrum. If a drug is a relatively weak infrared absorber, several micrograms may be required in order to obtain a clear, reliable spectrum. While this amount of material may be readily available for some types of analysis, it can easily exceed the quantity of material available in the forensic toxicology setting. One method that can be used to increase a drug's infrared absorption is to derivatize the drug with a polyfluorinated acid anhydride. Since carbonyl and carbon-fluorine bonds are strong infrared absorbers, molecules that possess such bonds have a heightened sensitivity to GC-FTIR analysis. Polyfluorinated acid anhydrides are capable of adding both carbonyl and carbon-fluorine bonds to drugs that possess either a hydroxyl, primary or secondary amine, or primary or secondary amide functional groups. Several derivatizing reagents were used and the extent to which they enhanced the identification of phenylpropanolamine were compared. Of the reagents studied, heptafluorobutyric acid anhydride (HFAA) produced the greatest increase in the phenylpropanolamine's sensitivity to GC-FTIR identification. Prior to derivatization, 1.8 micrograms of phenylpropanolamine was required for identification on the GC-FTIR, while only 0.032 micrograms of phenylpropanolamine was required after derivatization with HFAA. GC-FTIR, Drugs, Phenylpropanolamine.

AN (1) AD-A254 680/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Postmortem Alcohol Production in Fatal Aircraft Accidents.

DN (9) Final rept.

AU (10) Canfield, Dennis V.

Kupiec, Thomas C.

Huffine, Edwin F.

RD (11) Jul 1992

PG (12) 6 Pages

RS (14) DOT/FAA/AM-92/24

RC (20) Unclassified report

DE (23) *ACCIDENTS, *ALCOHOLS, *TOXICOLOGISTS

ACETALDEHYDE, ACETONES, ADDITION, AIRCRAFT, AVIATION ACCIDENTS, BILE,

BLOOD, BUTANOLS, DETERMINATION, DISTRIBUTION, ETHANOLS, PRODUCTION, REGULATIONS, URINE

ID (25) LPN-FAA-AM-B-91-TOX-66, Aircraft accidents, Aircraft crashes, Drunkenness

AB (27) During 1989 and 1990, the Civil Aeromedical Institute (CAMI) received specimens from 975 victims of fatal aircraft accidents. The maximum concentration of ethanol allowed under FAA regulations (0.04%, 40mg/dL) was exceeded in 79 of these cases (8%). It was determined based on the distribution of ethanol in urine, vitreous, blood, and tissue that 21 of the positive cases (27%) were from postmortem alcohol production. Twenty-two of the positive cases (28%) were found to be from the ingestion of ethanol. In 36 cases (45%) no determination could be made in regards to the origin of the ethanol. In two cases, postmortem alcohol production exceeded 0.15 percent (150mg/dL). The opinion held by some toxicologists that postmortem alcohol production can be inferred from the presence of acetaldehyde, acetone, butanol, and other volatiles was found to be incorrect. Several cases with postmortem ethanol had no other volatiles. Volatile compounds were found in several cases where no ethanol was present. In addition, a case was found where the relative ethanol concentrations in blood, bile, and vitreous humor were solely consistent with the ingestion of ethanol, but acetaldehyde, acetone, and 2-butanol were also found in blood. This clearly indicates that the presence or absence of other volatiles does not establish postmortem ethanol production. Ethanol, Postmortem.

AN (1) AD-A255 582/XAG

FG (2) 061100

061500

070400

070300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Enhancement of Drug Detection and Identification by Use of Various Derivatizing Reagents on GC-FTIR Analysis.

DN (9) Final rept.

AU (10) Huffine, Edwin F.

Canfield, Dennis V.

RD (11) Jul 1992

PG (12) 8 Pages

RS (14) DOT/FAA/AM-92/25

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *DRUGS, *IDENTIFICATION, *SPECTROPHOTOMETRY, *DETECTION, *GAS CHROMATOGRAPHY, *AUGMENTATION

ABSORPTION, ACIDS, AMIDES, AMINES, ANHYDRIDES, CARBON, CHROMATOGRAPHS,

FLUORINE, MATERIALS, MOLECULES, QUANTITY, SECONDARY, SENSITIVITY, TOXICOLOGY, CARBONYL COMPOUNDS, HYDROXYL RADICALS

ID (25) *Derivatizing reagent, *FTIR(Fourier Transform Infrared), Polyfluorinated acid anhydrides, PPA(Phenylpropanolamine), HFAA(Heptafluorobutyric Acid)

AB (27) Phenylpropanolamine (PPA) is a relatively common non-prescription sympathomimetic amine. As such, it is frequently detected during forensic analysis. The presence of phenylpropanolamine can be confirmed by using Gas Chromatograph-Fourier Transform Infrared (GC-FTIR) spectrophotometry. One constraint of the GC-FTIR is the quantity of material required to obtain a suitable IR spectrum. If a drug is a relatively weak infrared absorber, several micrograms may be required in order to obtain a clear, reliable spectrum. While this amount of material may be readily available for some types of analysis, it can easily exceed the quantity of material available in the forensic toxicology setting. One method that can be used to increase a drug's infrared absorption is to derivatize the drug with a polyfluorinated acid anhydride. Since carbonyl and carbon-fluorine bonds are strong infrared absorbers, molecules that possess such bonds have a heightened sensitivity to GC-FTIR analysis. Polyfluorinated acid anhydrides are capable of adding both carbonyl and carbon-fluorine bonds to drugs that possess either a hydroxyl, primary or secondary amine, or primary or secondary amide functional groups. Several derivatizing reagents were used and the extent to which they enhanced the identification of phenylpropanolamine were compared. Of the reagents studied, heptafluorobutyric acid anhydride (HFAA) produced the greatest increase

in the phenylpropanolamine's sensitivity to GC-FTIR identification. Prior to derivatization, 1.8 micrograms of phenylpropanolamine was required for identification on the GC-FTIR, while only 0.032 micrograms of phenylpropanolamine was required after derivatization with HFAA. GC-FTIR, Drugs, Phenylpropanolamine.

AN (1) AD-A255 766/XAG

FG (2) 010200

070300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Postmortem Alcohol Production in Fatal Aircraft Accidents.

DN (9) Final rept.

AU (10) Canfield, Dennis V.

Kupiec, Thomas C.

Huffine, Edwin F.

RD (11) Jul 1992

PG (12) 5 Pages

RS (14) DOT/FAA/AM-92/24

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *ALCOHOLS, *AVIATION ACCIDENTS

ACCIDENTS, ACETALDEHYDE, ACETONES, ADDITION, AIRCRAFT, BILE, BLOOD, BUTANOLS, DETERMINATION, DISTRIBUTION, ETHANOLS, PRODUCTION, REGULATIONS, TOXICOLOGISTS, URINE

ID (25) CAMI(Civil AeroMedical Institute), Aircraft accidents, Ethanol, Postmortem.

AB (27) During 1989 and 1990, the Civil Aeromedical Institute (CAMI) received specimens from 975 victims of fatal aircraft accidents. The maximum concentration of ethanol allowed Linder FAA regulations (0.04%, 40mg/dL) was exceeded in 79 of these cases (8%). It was determined based on the distribution of ethanol in urine, vitreous, blood, and tissue that 21 of the positive cases (27%) were from postmortem alcohol production. Twenty-two of the positive cases (28%) were found to be from the ingestion of ethanol. In 36 cases (45%) no determination could be made in regards to the origin of the ethanol. In two cases, postmortem alcohol production exceeded 0.15 percent (150mg/dL). The opinion held by some toxicologists that postmortem alcohol production can be inferred from the presence of acetaldehyde, acetone, butanol, and other volatiles was found to be incorrect. Several cases with postmortem ethanol had no other volatiles. Volatile compounds were found in several cases where no ethanol was present. In addition, a

case was found where the relative ethanol concentrations in blood, bile, and vitreous humor were solely consistent with the ingestion of ethanol, but acetaldehyde, acetone, and 2-butanol were also found in blood. This clearly indicates that the presence or absence of other volatiles does not establish postmortem ethanol production. Ethanol, Postmortem.

AN (1) AD-A255 797/XAG

FG (2) 010200

010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) Terminal Area Forecasts FY 1992 - 2005.

RD (11) Jul 1992

PG (12) 495 Pages

RN (18) XH-FAA-AV

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *AIRPORTS, *TERMINALS

AIR, AIRCRAFT, APPROACH, BUDGETS, CONTRACTS, CONTROL, INDUSTRIES, OPERATION, PLANNING, RADAR, TOWERS, TRAFFIC, UNITED STATES

ID (25) Airport forecasts, Aviation activity, Terminal area forecasts,

Enplanements, Aircraft operations, Air carrier, Commuter, Air taxi, General aviation, Military aviation, Forecasts, FY1992-2005, FAA

AB (27) This report contains forecasts of aviation activity of 869 airports in the United States for fiscal years 1992-2005. These include 400 airports with FAA air traffic control towers and radar approach control service and 26 FAA contract towers. For each airport, detailed forecasts are made for the four major users of the air traffic system: air carriers, air taxi/commuters, general aviation, and military.

Summary tables contain national, FAA regional, and State aviation data and other airport specific highlights. The forecasts have been prepared to meet the budget and planning needs of the FAA and provide airport-specific information that can be used by State and local aviation authorities, the aviation industry, and the general public.

AN (1) AD-A255 936/XAG

FG (2) 010200

060400

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Identification and Quantitation of Triamterene in Blood and Urine from a Fatal Aircraft Accident.

DN (9) Final rept.

AU (10) White, Vicky
Canfield, Dennis V.
Hordinsky, Jerry R.

RD (11) Jul 1992

PG (12) 7 Pages

RS (14) DOT/FAA/AM-92/23

RN (18) XH-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *ACCIDENTS, *AIRCRAFT, *AVIATION ACCIDENTS, *BLOOD CHROMATOGRAPHY, DIURETICS, DRUGS, EFFICIENCY, EXTRACTION, GAS CHROMATOGRAPHY, HYPERTENSION, IDENTIFICATION, LAYERS, LIQUID CHROMATOGRAPHY, LIQUIDS, REGIONS, SOLVENTS, STANDARDS, URINE

ID (25) Triamterene, Liquid chromatography, HPLC, TLC, Extraction

AB (27) Triamterene, a diuretic drug used in combination with other drugs for the treatment of hypertension, was found in the blood and urine of a fatal aircraft accident victim. The extraction and identification of triamterene is difficult. It exhibits poor extraction efficiency using some standard base extraction procedures and the parent drug is unsuitable for analysis using gas chromatography. In this case a thin layer chromatography solvent system and high performance liquid chromatography were used to identify and quantitate triamterene in blood and urine. Triamterene is a strong absorber in the ultraviolet region and has an unusual UV spectrum, which simplifies the identification and quantitation of this substance by High Performance Liquid Chromatography. Triamterene, HPLC, TLC, Extraction.

AN (1) AD-A256 374/XAG

FG (2) 170703
061000

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Air Traffic Controller Visual Scanning.

DN (9) Technical note Jan 91-Jan 92

AU (10) Stein, Earl S.

RD (11) Jul 1992

PG (12) 119 Pages

RS (14) DOT/FAA/CT-TN92/16

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *SCANNING, *SKILLS, *VISUAL PERCEPTION APPROACH, BEHAVIOR, COMPUTATIONS, DYNAMICS, ERRORS, EYE, EYE MOVEMENTS, FREQUENCY, OCULOMETERS, OPERATION, PATTERNS, RADAR, TERMINALS, TIME,

TRACKING, TRAINING, WORK, INFORMATION PROCESSING

ID (25) Air traffic control, Information processing, Visual scanning,

Oculometer, Eye fixation, Eye movements, Saccades eye tracking

AB (27) Air traffic controllers scan multiple displays to gather information

necessary to make critical decisions in order to separate aircraft flying in the National Airspace System (NAS). When controllers make an error, they often respond that they did not see a piece of information that was right in front of them. Little is known about how controllers systematically scan their displays. This study was undertaken to determine whether there were patterns of scanning that characterized personnel with different levels of skill. Ten FAA controllers from a very active Terminal Radar Approach Control Facility (TRACON) participated in this study in which they controlled simulated radar traffic while their eye movements were monitored with an oculometer. This device allowed the computation of fixation frequencies and saccade duration during dynamic operations. Results indicated that the more experienced personnel had higher fixation frequencies than those who were in training. There were also significant changes in scanning behavior over time that the controllers worked. This occurred irrespective of experience and indicated that it takes between 5 and 10 minutes for the controller to establish a pattern which continues for the remainder of the work period. This suggests the importance of systematic relief period as personnel come on to control position.

AN (1) AD-A257 157/XAG

FG (2) 010500
130200
130300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Unified Airport Pavement Design and Analysis Concepts Workshops Held in Cambridge, Massachusetts on 16-17 July 1991.

RD (11) Jul 1992

PG (12) 579 Pages

RS (14) DOT/FAA/RD-92/17

RN (18) XH-DOT/FAA/RD
RC (20) Unclassified report
NO (21) Original contains color plates: All DTIC/NTIS reproductions will be in black and white.
DE (23) *AIRPORTS, *CONSTRUCTION MATERIALS, *PAVEMENTS, *ASPHALT, *CONCRETE
AIRCRAFT, ANOMALIES, COMPATIBILITY, COMPUTER PROGRAMS, CONFIGURATIONS, CONSTRUCTION, COSTS, CROSS SECTIONS, DAMAGE, DISPLACEMENT, GEOMETRY, INPUT, INTERACTIONS, METHODOLOGY, MODELS, NONDESTRUCTIVE TESTING, RATES, RELIABILITY, STATE OF THE ART, STRESS ANALYSIS, STRESSES, SURFACES, SYMPOSIA, VEHICLES, WORKSHOPS, FAILURE(MECHANICS), SUBGRADES, FINITE ELEMENT ANALYSIS, CRACKING(FRACTURING), VISCOELASTICITY, THERMAL ANALYSIS, THICKNESS, RUNWAYS, TAXIWAYS, APRONS, COMMERCIAL AIRCRAFT, LOADS(FORCES), MICROCRACKING, MECHANICAL PROPERTIES, DAMAGE ASSESSMENT
ID (25) Bearing capacity, Load distribution, *Portland cement, Civilian aircraft, Design criteria, Micromechanics, Rutting
AB (27) This publication outlines the proceedings of a workshop held in July 1991 at Cambridge, MA. The workshop provided a forum for leading pavement engineers, researchers and materials scientists to present concepts for the formulation of a unified mechanistic methodology for the analysis and design of pavements serving civil aircraft. The need developed from industry's requests for adequate methods to design, analyze and predict performance of pavements serving more demanding aircraft. The publication contains essential elements of papers and reports presented at the workshop. The general agreement was that, given the prevailing state of the art in computer capability, the requirements for increased capacity through more frequent passes and heavier aircraft, and the development of new man-made construction materials, a more realistic and cost-beneficial approach to pavement analysis and design could be accomplished through the use of discrete material elements, faithful representation of actual material behavior and geometry, and dynamic interaction with rates of loading from any gear configuration. The belief was that computer programs capable to perform the task already exist in other areas of engineering mechanics and that they could be tailored for pavement applications. The papers presented would substitute current methods based on empirical data and broad theoretical assumptions with a generally applicable mechanistic approach. The suggested approach would obviate anomalies that result

when current methods are applied to certain cross-section configurations. Pavement discrete model formulation, Heavy aircraft multigear gear compatibility, Micro-mechanical behavior, Stress analysis, Advanced airport pavement design systems.

AN (1) AD-A252 493/XAG
FG (2) 050500
050900
050800
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Procedural Justice, Occupational Identification, and Organizational Commitment.
DN (9) Final rept.
AU (10) Witt, L. A.
RD (11) Jun 1992
PG (12) 13 Pages
RS (14) DOT/FAA/AM-92/21
RC (20) Unclassified report
DE (23) *SOCIOLOGY, *EMPLOYEE RELATIONS
IDENTIFICATION, IDENTITIES, MODELS, ORGANIZATIONS, THEORY, VALUE, WORK, PSYCHOLOGY, MORALE
ID (25) Procedural justice, Organizational commitment, Social identity theory, Employers, Occupation
AB (27) Extending Tyler's (1989) group-value model, the present study tested the hypothesis that procedural justice may be of differential salience in the development of organizational commitment among individuals who identify primarily with their employing organization versus their occupation. Data collected from 1,235 FAA employees indicated that procedural justice scores were moderately related to commitment scores. Contrary to the hypothesis, occupational identification had no moderating effect on the procedural justice-organizational commitment relationship. Consistent with the multiple commitment literature, employees identifying primarily with their occupation perceived more procedural justice, but expressed less commitment to the organization, than those identifying with their organization. These results provide little support for this extension of the group-value model of procedural justice but some support for the multiple commitment approach to the study of work commitment. Procedural Justice, Participation in Organizational Commitment, Multiple Organizational Commitment, Social Identity Theory.

AN (1) AD-A253 073/XAG
FG (2) 050900
120700
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Technical Training for National Simulator Evaluation Specialist.
DN (9) Technical note
AU (10) McKinney, Theos D., Jr
RD (11) Jun 1992
PG (12) 37 Pages
RS (14) DOT/FAA/CT-TN92/14
RN (18) XF-DOT/FAA/CT
RC (20) Unclassified report
DE (23) *SPECIALISTS, *TRAINING, *FLIGHT SIMULATORS, *TEST AND EVALUATION FLIGHT, FLIGHT TRAINING, MAINTENANCE, SIMULATORS, METHODOLOGY, STANDARDS, TRAINING MANAGEMENT
ID (25) FAA(Federal Aviation Administration), Simulator evaluation specialists, Technical training
AB (27) This report examines the technical training needs of the Federal Aviation Administration (FAA) specialists who evaluate and qualify FAA recognized flight training simulators and devices. The need for this training is established and sources and methodologies recommended for initial, maintenance, and update courses. Flight Training Simulators, Simulator Evaluation Specialists (SESS), Technical Training.

AN (1) AD-A253 648/XAG
FG (2) 230500
061200
010309
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE
TI (6) Comparisons of Molecular Sieve Oxygen Concentrators for Potential Medical use Aboard Commercial Aircraft.
DN (9) Final rept.
AU (10) England, Harvey M., Jr.
Wilcox, Bruce C., Jr.
Mclean, Garnet A.
RD (11) Jun 1992
PG (12) 10 Pages
RS (14) DOT/FAA/AM-92/22

RC (20) Unclassified report
DE (23) *MOLECULAR SIEVES, *OXYGEN AIR, ALTITUDE, ALTITUDE CHAMBERS, CHAMBERS, COSTS, DECOMPRESSION, FLOW, GROUND LEVEL, MASS, MASS SPECTROMETERS, MICROCOMPUTERS, PURITY, REDUCTION, SPECTROMETERS, TEST AND EVALUATION, VIABILITY, HIGH PRESSURE
ID (25) *Concentrators, *Commercial aircraft, MSOC(Molecular Sieve Oxygen Concentrators), Zeolites, *Medically impaired air traveler, Medical oxygen
AB (27) Medically-impaired air travelers requiring supplemental oxygen must depend on airlines to provide oxygen cylinders. Performance, space, and cost are considerations in providing this service. Tests were conducted in an altitude chamber to assess the viability of Molecular Sieve Oxygen Concentrators (MSOC) as an alternative. Five different MSOC were placed in the altitude chamber, and connected to a mass spectrometer outside. Gas concentration was digitized at one sample-per-second and stored on line via a microcomputer. Tests at ground level showed four of the five MSOC produced oxygen at 95% purity at 2 liters per minute flow, which was maintained until 13,000 feet. Increasing altitude resulted in graded reductions of oxygen levels. At 25,000 feet, only two MSOC withstood sudden decompression. Results of this study indicate that some MSOC indeed have the potential to provide oxygen for the medically-impaired air traveler. Molecular Sieve, Oxygen, Concentrators, Zeolites.

AN (1) AD-A253 853/XAG
FG (2) 010300
010500
120700
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) GNAS Maintenance Control Center (GMCC) Design Qualification Test and Evaluation (DQT&E) Test Procedures.
DN (9) Technical rept.
AU (10) Van Suetendael, Richard
RD (11) Jun 1992
PG (12) 60 Pages
RS (14) DOT/FAA/CT-TN91/40
RC (20) Unclassified report
DE (23) *CONTROL, *MAINTENANCE, *QUALIFICATIONS, *TEST AND EVALUATION AIRPORTS, CONTROL CENTERS, DOCUMENTS, INTERNATIONAL, INTERNATIONAL

AIRPORTS, MAINTENANCE MANAGEMENT, MANAGEMENT, MONITORING,
PHASE,

REQUIREMENTS, URBAN AREAS

ID (25) *GNAS(General National Airspace System), RMMS(Remote Maintenance
Monitoring System)

AB (27) This document presents the procedures used for Design Qualification
Test and Evaluation (DQT and E) testing of the General National
Airspace System (GNAS) Maintenance Control Center (GMCC). As Test
Director, ACN-250 conducted DQT and E testing at the Federal Aviation
Administration (FAA) technical Center, Atlantic City International
Airport, N.J. The purpose of the test is to verify that the phase I and
phase II GMCC design requirements are met. General National Airspace
System (GNAS), Maintenance Control Center (GMCC), Remote Maintenance
Monitoring System (RMMS), Maintenance Management System (MMS).

AN (1) AD-A257 780/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC
CITY NJ**

**TI (6) Proceedings of the AIAA/FAA Joint Symposium on General Aviation Systems
Held in Wichita, Kansas on 16-17 March 1992**

AU (10) Ferrara, Gus
Mason, Karen

RD (11) Jun 1992

PG (12) 516 Pages

RS (14) DOT/FAA/CT-92/17

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *CONTROL

FUELS, KANSAS, MANAGEMENT, STATE OF THE ART, TRAFFIC

ID (25) Proceedings, General aviation systems, AIAA, FAA, AIAA/FAA Joint
symposium on general aviation systems, AIAA General aviation systems
technical committee, Federal aviation administration technical center,
*Air traffic control

AB (27) The 1992 AIAA/FAA Joint Symposium on General Aviation Systems was the
result of the combined efforts of the AIAA General Aviation Systems
Technical Committee and the Federal Aviation Administration Technical
Center. This symposium offered the opportunity to present and review
the current state of the art in research that is being conducted in
support of general aviation. All told, the papers presented covered the
entire spectrum of research, and the participants had the opportunity
to hear presentations on everything from alternate fuels to
developments in air traffic control.

AN (1) AD-A258 209/XAG

FG (2) 010309

010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AIRPORT**

PLANNING AND PROGRAMMING

**TI (6) Report to Congress - Long-Term Availability of Adequate Airport System
Capacity.**

RD (11) Jun 1992

PG (12) 29 Pages

RS (14) DOT/FAA/PP-92-4

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *AIRPORTS

AVAILABILITY, CONGESTION, CONGRESS, EXPANSION, SAFETY,
TRANSPORTATION

ID (25) Report to Congress, Airport system capacity, Projections, Futurighs,
*Planning, Air traffic, Facilities

AB (27) Report is submitted in accordance with Section 309 of the Airport and
Airway Safety and Capacity Expansion Act of 1987, which requires the
Secretary of Transportation to conduct a study for the purpose of
developing an overall airport system plan through the year 2010. Report
describes the probably extent of airport congestion in the future,
given current trends.

AN (1) AD-A266 085/XAG

FG (2) 010600

010500

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) U. S. Civil Airmen Statistics for Calendar Year 1991.

RD (11) 30 Jun 1992

PG (12) 35 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PILOTS, *STATISTICS, *FLIGHT CREWS

FLIGHT, GLIDERS, HELICOPTERS, INSTRUCTORS, NUMBERS, RATINGS,
STUDENTS,

TRANSPORT, MAINTENANCE PERSONNEL, CIVILIAN POPULATION

ID (25) Department of Transportation, Federal Aviation administration, Airline
transport glider, Certificates, Instrument ratings, Lighter than air

aircraft, *Parachute riggers

AB (27) This report furnishes detailed airmen statistics. It contains calendar year statistics on pilots and nonpilots and the number of certificates issued... . Certificates held, Nonpilot, Private, Commercial, Student, Airline transport, Glider, Helicopter, Lighter-than-air, instrument ratings, Flight instructors, Pilot certificates issued.

AN (1) AD-A252 651/XAG

FG (2) 010600
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Evaluation of Head Impact Kinematics for Passengers Seated behind Interior Walls.

DN (9) Final rept.

AU (10) Gowdy, Van
DeWeese, Richard

RD (11) May 1992

PG (12) 15 Pages

RS (14) DOT/FAA/AM-92/20

RN (18) XF-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *IMPACT TESTS, *AIRCRAFT SEATS, *ANTHROPOMETRY,
*CRASHWORTHINESS

BELTS, DYNAMICS, HEAD(ANATOMY), KINEMATICS, MOTION, PASSENGERS,
REGULATIONS, REQUIREMENTS, SEATS, SPECIFICATIONS, TEST AND

EVALUATION,

WALLS, WOUNDS AND INJURIES, RESTRAINT

ID (25) Head injury, ATD(Anthropomorphic Test Dummy)

AB (27) Federal Aviation Regulations for crashworthy seats include the Head Injury Criteria (HIC) as part of the pass-fail performance specifications. For passenger seats located behind interior walls to meet this requirement, the dynamics of head impact with the wall must be evaluated from a system approach. Procedures for conducting system tests and analyzing the head motion of an anthropomorphic test dummy (ATD) are described. Analyses of head kinematics from dynamic impact tests with a lap belt restrained ATD are presented. Passenger Head Injury, Kinematics, Interior Walls.

AN (1) AD-A252 734/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Drop Test - Cessna Golden Eagle 421B.

DN (9) Technical note Feb-Nov 90

AU (10) McGuire, Robert
Nissley, William
Wilson, Anthony

RD (11) May 1992

PG (12) 140 Pages

RS (14) DOT/FAA/TN91/32

RC (20) Unclassified report

DE (23) *STRUCTURAL RESPONSE, *STRUCTURAL COMPONENTS, *TRANSPORT AIRCRAFT

AIRCRAFT, AIRFRAMES, AIRPORTS, CRASHWORTHINESS, ENERGY, ENGINES, FLIGHT, FLOORS, FUELS, HEIGHT, IMPACT, IMPACT TESTS, INTERNATIONAL AIRPORTS, NEW JERSEY, RESPONSE, RESTRAINT, SEATS, STANDARDS, STRUCTURES, TEST AND EVALUATION, URBAN AREAS, VELOCITY, WINGS, LOADS(FORCES), ACCELERATION, DEFLECTION, DROP TESTS

ID (25) Impact loading, Cessna 421-B Aircraft

AB (27) This report presents the results of two airplane vertical impact tests conducted at the Federal Aviation Administration (FAA) Technical Center, Atlantic City International Airport, New Jersey. These tests entailed dropping a low wing, twin engine Cessna 421B aircraft from a vertical height of 11.2 feet, resulting in an impact velocity of approximately 26.0 feet per second (ft/s). In both tests the aircraft was configured to simulate actual in-flight conditions including seats, occupants, and fuel. The structural response of the airframe, seats, and simulated occupants (anthropomorphic dummies) were measured throughout the tests, and the results are presented in this report. The data collected in these tests and future tests of other commuter type aircraft will provide the basis for improved seat standards for commuter airplanes. These tests describe the impact response characteristics of commuter category airplane airframes, floor structures, seats, seat attachments and occupant restraint systems. Airplane Vertical Impact, Crashworthiness, Commuter Airplane, Energy Absorbing Seats.

AN (1) AD-A254 569/XAG

FG (2) 010500
010200
050400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT

PLANNING AND PROGRAMMING

TI (6) Report to Congress State Block Grant Program.

RD (11) May 1992

PG (12) 189 Pages

RS (14) DOT/FAA/PP-92-1

RC (20) Unclassified report

NO (21) Report of the Secretary of Transportation to the United States Congress

Pursuant to the Airport and Airway Safety and Capacity Expansion Act of

1987 (Public Law 100-233) and the Aviation Safety and Capacity

Expansion Act of 1990 (Public Law 101-508).

DE (23) *AIRPORTS, *AVIATION SAFETY

CONGRESS, EXPANSION, GRANTS, SAFETY, TRANSPORTATION, UNITED

STATES,

STATE GOVERNMENT

ID (25) Air transportation, Block grants, Pilot programs

AN (1) AD-A255 467/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Bird Ingestion into Large Turbofan Engines.

DN (9) Interim rept.

AU (10) Banilower, Howard

Goodall, Colin

RD (11) May 1992

PG (12) 87 Pages

RS (14) DOT/FAA/CT-91/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT ENGINES, *BIRDS, *TURBOFAN ENGINES

AIRCRAFT, DAMAGE, ENGINES, FLIGHT, HIGH BYPASS TURBOFANS,

MANAGEMENT,

NUMBERS, STANDARDS, WEIGHT, INGESTION(ENGINES)

ID (25) Aircraft engine damage, Aircraft engine bird ingestion, Species on

ingested birds, Weights of ingested birds, *Bird strikes, Bird impact,

*Bird ingestion

AB (27) The Federal Aviation Administration (FAA) is conducting a study of bird

ingestion into certain modern, large high bypass turbofan engines. The

engines under consideration were certificated to current FAA standards

and are installed in A300, A310, A320, B747, B757, B767, DCIO, and MDII

aircraft in commercial service worldwide. Data were collected during

1989-1991 by the principal manufacturers of such engines. This interim

report provides some analysis of the initial 381 aircraft ingestion

events, with emphasis on the kinds and numbers of ingested birds and the adverse effects of bird ingestion on aircraft engines and flights.

AN (1) AD-A255 863/XAG

FG (2) 210500

060300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Bird Ingestion into Large Turbofan Engines.

DN (9) Interim rept.

AU (10) Banilower, Howard

Goodall, Colin

RD (11) May 1992

PG (12) 79 Pages

RS (14) DOT/FAA/CT-91/17

RN (18) XH-XD

RC (20) Unclassified report

NO (21) Prepared in collaboration with Princeton Univ. and Pennsylvania State Univ.

DE (23) *AIRCRAFT ENGINES, *BIRDS, *DAMAGE, *TURBOFAN ENGINES

AIRCRAFT, ENGINES, FLIGHT, MANAGEMENT, NUMBERS, PENNSYLVANIA, STANDARDS, WEIGHT, JET ENGINES

ID (25) Aircraft engine damage, Aircraft engine bird ingestion, Species on ingested birds, Weights of ingested birds, FAA, Bird ingestion

AB (27) The Federal Aviation Administration (FAA) is conducting a study of bird

ingestion turbofan engines. The engines under consideration were

certificated to current FAA standards and are installed in A300, A310,

A320, B747, B757, B767, DCIO, and MDII aircraft in commercial Service

worldwide. Data were collected during 1989-1991 by the principal

manufacturers of such engines. This Interim report provides some

analysis of the initial 381 aircraft ingestion events, with emphasis on

the kinds and numbers of ingested birds and the adverse effects of bird

ingestion on aircraft engines and flights.

AN (1) AD-A256 159/XAG

FG (2) 010500

130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Performance of Insulated Pavements at Newton Field, Jackman, Maine.

DN (9) Final rept.

AU (10) Kestler, Maureen A.
Berg, Richard L.
RD (11) May 1992
PG (12) 30 Pages
RS (14) CRREL-92-9
CT (15) DTFA01-89-Z-02050
RN (18) DOT/FAA/RD-92/8
XA-CRREL
RC (20) Unclassified report
DE (23) *INSULATION, *PAVEMENTS, *RUNWAYS, *PERFORMANCE(ENGINEERING)
AIRPORTS, APRONS, CROSS SECTIONS, DISCONTINUITIES, ESTIMATES,
FROST,
FROST HEAVE, LAYERS, OBSERVATION, PENETRATION, POLYSTYRENE,
ROADS,
STRUCTURES, TEST AND EVALUATION, VARIATIONS, WINTER
ID (25) Frost penetration, Insulated pavement, Insulation, Newton Field(Maine)
AB (27) In 1986, the runway at Newton Field, a small airport in Jackman, Maine,
was reconstructed using a 2-in.-thick layer of extruded polystyrene
insulation as part of the pavement structure. At the same time, a
nearby town road was reconstructed using a conventional noninsulated
pavement cross section for relatively heavy loads. Both pavements were
monitored for frost penetration, frost heave, and seasonal changes in
pavement strength. Since frost penetration beneath the insulation layer
of the runway at Newton Field exceeded empirical estimates during
winter 1986-1987, four additional test sections with varying
combinations of insulation and subbase thicknesses were constructed
adjacent to the airport's parking apron during summer 1987. Although
the thermal performance of the insulated pavement test sections was
comparable to design expectations for the following three years,
evidence of discontinuities in the insulation layer in the Newton Field
runway demonstrates the insulated pavement's susceptibility to
variations in construction technique and site conditions. This report
discusses pavement performance at each of the test sites over the
observation periods 1986-1990 and 1987-1990.

AN (1) AD-A257 051/XAG
FG (2) 010500
170702
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC
CITY NJ
TI (6) Global Positioning System Runway Incursion Program Static Ground Tests.
DN (9) Technical note Feb-Mar 91
AU (10) Caruso, Carl

RD (11) May 1992
PG (12) 25 Pages
RS (14) DOT/FAA/CT-TN91/44
RN (18) XH-DOT
RC (20) Unclassified report
DE (23) *TAXIWAYS, *AVIATION SAFETY, *TAXIING
ACCURACY, AIRPORTS, GLOBAL POSITIONING SYSTEM, INTERNATIONAL,
NAVIGATION, PILOTS, RUNWAYS, TERMINALS, TEST AND EVALUATION,
VISIBILITY
AB (27) This report describes ground tests of the Global Positioning System
(GPS) in the terminal area at the Atlantic City International Airport.
The purpose of the Runway Incursion Program is to investigate the
application of GPS as a navigation aid to allow the pilot to safely
traverse airport taxiways and runways under poor visibility conditions.
The primary objective of the tests was to resolve the critical issue of
differential GPS accuracy as a function of the differential update
rate. Global Positioning System (GPS), U.S. Runway Incursion,
Differential GPS (DGPS).

AN (1) AD-A261 253/XAG
FG (2) 170800
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC
CITY NJ
TI (6) Proceedings of the First International Symposium on Explosive Detection
Technology.
DN (9) Final rept. 13-15 Nov 91
AU (10) Khan, Siraj M.
RD (11) May 1992
PG (12) 968 Pages
RS (14) DOT/FAA/CT-92/11
RN (18) XH-DOT/FAA/CT
RC (20) Unclassified report
DE (23) *EXPLOSIVES DETECTION
CHEMICALS, CIVIL AVIATION, DETECTION, ENGINEERS, EXPLOSIVES, FRANCE,
GLOBAL, INTEGRATION, INTERNATIONAL, NEW JERSEY, OPENINGS, POLICIES,
PROCESSING, SCANNERS, SCIENTISTS, SECURITY, SIGNAL PROCESSING,
SIGNALS,
SIMULATION, TEST AND EVALUATION, UNITED STATES, URBAN AREAS,
VAPORS, X
RAYS, SYMPOSIA
ID (25) Biosensors
AB (27) This report contains opening remarks, kickoff address and keynote
address, and 89 papers presented at the First International Symposium

on Explosive Detection Technology held November 13-15, 1991, in Atlantic City, New Jersey. The general papers deal with the outlook of civil aviation security policy makers in the United States, the United Kingdom, and France, and a general introduction to the subject of explosive detection technology. These are followed by papers on physical techniques for explosive detection (nuclear, X-ray and electromagnetic techniques and combinations thereof), chemical and biological techniques for explosive vapor detection, tagging, signal processing and simulation, and testing and field experience. This compendium of useful and practical information has been prepared for program managers, scientists, and engineers engaged in research, development, test, and evaluation (RDT and E) in the critical area of global aviation security.... Bulk detection, Vapor detection, X-ray scanners, Tagging of explosives, Biosensors, Systems integration.

AN (1) AD-A263 617/XAG
FG (2) 010309
010500
130600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE

TI (6) Report of the FAA International Conference on Airplane Ground Deicing Held in Reston, Virginia on May 28 - 29, 1992.

RD (11) 29 May 1992

PG (12) 317 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION

GENERAL AVIATION AIRCRAFT, COMMERCIAL AIRCRAFT, DEICING SYSTEMS, SYMPOSIA, WINGS

ID (25) Federal Aviation Administration, Deicing, Anti-icing

AB (27) On March 22, 1992 USAir Flight 405, departing from New York's La Guardia Airport, crashed on takeoff. The Federal Aviation Administration (FAA) is proceeding on the assumption that this tragedy was due to icing. In response, the FAA initiated a 6-month effort to improve the safety of winter flight operations. This effort will result in safety improvements that will be implemented before next winter. A better understanding of airplane ground deicing and anti-icing issues is a crucial prerequisite to the implementation of feasible and effective safety improvements. To achieve this goal, the FAA sponsored a conference at which the international aviation community could exchange thoughts and offer recommendation on a variety of issues concerning safe winter operations. On May 28 and 29, 1992, the FAA held

the International Conference on Airplane Ground Deicing to develop a better understanding of airplane deicing and anti-icing issues. More than 750 participants discussed the problems posed by aircraft deicing and examined possible solutions. The conference produced suggestions for corrective actions the should be taken before this winter and possible long-term improvements to existing systems. The focus of the conference was carrier operated turbine-powered airplanes with more than 30 passenger seats.

AN (1) AD-A251 878/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Organizational Politics, Participation in Decision-Making, and Job Satisfaction.

DN (9) Final rept.

AU (10) Witt, L. A.

RD (11) Apr 1992

PG (12) 15 Pages

RS (14) DOT/FAA/AM-92/17

RC (20) Unclassified report

DE (23) *DECISION MAKING, *JOB SATISFACTION, *ORGANIZATION THEORY HYPOTHESES, PERCEPTION, VARIABLES, REGRESSION ANALYSIS

ID (25) *Organizational politics, Biodata

AB (27) The study tested two hypotheses: (a) that organizational politics as measured by the Kacmar and Ferris (1991) Perceptions of Organizational Politics Scale would be negatively related to feelings of job satisfaction; and (b) that participation in decision-making (PDM) would moderate that relationship. In line with concerns for dispositional affect as a contributor to method variance and the possibility that biodata may explain some of the effects of organizational politics and PDM on job satisfaction, dispositional affect and biodata variables were included in the analyses. Hierarchical moderated multiple regression analyses conducted on data collected from 1,083 Federal employees confirmed the hypotheses. Organizational Politics, Participation in Decision-making, Job Satisfaction.

AN (1) AD-A251 879/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Longitudinal Examination of Applicants to the Air Traffic Control Supervisory Identification and Development Program.

DN (9) Final rept.

AU (10) Myers, Jennifer G.

RD (11) Apr 1992

PG (12) 58 Pages

RS (14) DOT/FAA/AM-92/16

RN (18) XD-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS

AIR TRAFFIC, COLLECTION, CONTROL, EMPLOYMENT, LABORATORIES, MANAGEMENT,

PERSONNEL, PERSONNEL MANAGEMENT, PROFILES, SELECTION, SPECIALISTS,

SUPERVISORS, TEST AND EVALUATION, TIME, TRAFFIC, TRAINING

AB (27) The Federal Aviation Administration began development of an extensive longitudinal database on its air traffic controller workforce following the strike of 1981. Since that time, data have been collected on thousands of air traffic controllers, spanning a period which covers their application to the federal government for employment to their achievement of a first-line supervisor position. This collection of papers examines a subset of air traffic control specialists who have completed the agency's supervisor selection program, beginning with their performance on the Office of Personnel Management test battery and other cognitive tests administered prior to completion of the air traffic controller Screen Program. Measures of academic, laboratory, and overall Screen performance were examined in relationship to aspects of performance in the supervisor selection program. Field training profiles were analyzed to determine differences between successful and unsuccessful supervisor selection program candidates and relationships with selection program performance. Finally, performance in the supervisor selection program was compared for those who were selected as first-line supervisors and those who were not. Selection, Air Traffic Control Specialist, First-Line Supervisor, Performance, Training.

AN (1) AD-A251 888/XAG

FG (2) 230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inward Contaminant Leakage Tests of the S-Tron Corporation Emergency

Escape Breathing Device. Phase 1. Tests of the Original Design. Phase 2. Tests with the Redesigned Neck Seal.

DN (9) Final rept.

AU (10) Wilcox, Bruce C., Jr.

England, Harvey M., Jr.

McLean, Garnet A.

RD (11) Apr 1992

PG (12) 28 Pages

RS (14) DOT/FAA/AM-92/18

RC (20) Unclassified report

DE (23) *CONTAMINANTS, *TEST AND EVALUATION, *BREATHING APPARATUS CARBON DIOXIDE, CHAMBERS, EMERGENCIES, NAVY, OXYGEN, PERFORMANCE TESTS,

PHYSIOLOGY, RESPIRATION, SULFUR, TEMPERATURE

ID (25) Sulfur hexafluoride, EEBD(Emergency Escape Breathing Device)

AB (27) At the request of S-Tron Corporation, to support their contract with the U. S. Navy, performance tests of the Emergency Escape Breathing Device (EEBD) were conducted in the Environmental Physiology Research Section contaminant leakage chamber. Sulfur hexafluoride (SF6) challenge was used to determine contaminant leakage; oxygen and carbon dioxide levels, as well as temperature readings, were also obtained.

Eight successful tests were conducted with the original neck seal design first used by Scott Aviation in their Crewmember Protective Breathing Equipment, four additional tests were conducted with a proprietary new neck seal designed by S-Tron. The EEBD all performed within test limits. Emergency escape breathing device (EEBD) Contaminant Leakage U.S. Navy S-TRON.

AN (1) AD-A252 124/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Organizational Politics, Participation in Decision-Making, and Job Satisfaction.

DN (9) Final rept.

AU (10) Witt, L. A.

RD (11) Apr 1992

PG (12) 14 Pages

RS (14) DOT/FAA/AM-92/17

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *JOB SATISFACTION, *GOVERNMENT EMPLOYEES

DECISION MAKING, HYPOTHESES, PERCEPTION, SCALE, VARIABLES, CIVILIAN PERSONNEL

ID (25) Organizational politics, PDM(Participation in Decision Making), Federal employees, Job satisfaction

AB (27) The study tested two hypotheses: (a) that organizational politics as measured by the Kacmar and Ferris (1991) Perceptions of Organizational Politics Scale would be negatively related to feelings of job satisfaction; and (b) that participation in decision-making (PDM) would moderate that relationship. In line with concerns for dispositional affect as a contributor to method variance and the possibility that biodata may explain some of the effects of organizational politics and PDM on job satisfaction, dispositional affect and biodata variables were included in the analyses. Hierarchical moderated multiple regression analyses conducted on data collected from 1,083 Federal employees confirmed the hypotheses. Organizational Politics, Participation in Decision-making, Job Satisfaction.

AN (1) AD-A252 340/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Longitudinal Examination of Applicants to the Air Traffic Control Supervisory Identification and Development Program.

DN (9) Final rept.

AU (10) Myers, Jennifer G.

RD (11) Apr 1992

PG (12) 59 Pages

RS (14) DOT/FAA/AM-92/16

RN (18) XD-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *PERSONNEL MANAGEMENT, *PERSONNEL SELECTION,

*PERFORMANCE TESTS

EMPLOYMENT, PROFILES, SPECIALISTS, SUPERVISORS, TRAINING, DATA BASES,

PERFORMANCE(HUMAN)

ID (25) Technical competence

AB (27) The Federal Aviation Administration began development of an extensive longitudinal database on its air traffic controller workforce following the strike of 1981. Since that time, data have been collected on thousands of air traffic controllers, spanning a period which covers their application to the federal government for employment to their

achievement of a first-line supervisor position. This collection of papers examines a subset of air traffic control specialists who have completed the agency's supervisor selection program, beginning with their performance on the Office of Personnel Management test battery and other cognitive tests administered prior to completion of the air traffic controller Screen Program. Measures of academic, laboratory, and overall Screen performance were examined in relationship to aspects of performance in the supervisor selection program. Field training profiles were analyzed to determine differences between successful and unsuccessful supervisor selection program candidates and relationships with selection program performance. Finally, performance in the supervisor selection program was compared for those who were selected as first-line supervisors and those who were not. Selection, Air Traffic Control Specialist, First-Line Supervisor, Performance, Training.

AN (1) AD-A252 341/XAG

FG (2) 230500

150603

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inward Contaminant Leakage Tests of the S-Tron Corporation Emergency Escape Breathing Device. Phase 1. Tests of the Original Design. Phase 2. Tests with the Redesigned Neck Seal.

DN (9) Final rept.

AU (10) Wilcox, Bruce C., Jr.

England, Harvey M., Jr.

McLean, Garnet A.

RD (11) Apr 1992

PG (12) 28 Pages

RS (14) DOT/FAA/AM-92/18

RN (18) XF-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *TEST AND EVALUATION, *BREATHING MASKS

CARBON DIOXIDE, CHAMBERS, CONTAMINANTS, EMERGENCIES, NAVY, OXYGEN,

PERFORMANCE TESTS, PHYSIOLOGY, RESPIRATION, TEMPERATURE, GAS SEALS

ID (25) EEED(Emergency Escape Breathing Devices), Sulfur hexafluoride, Leakage

AB (27) At the request of S-Tron Corporation, to support their contract with the U. S. Navy, performance tests of the Emergency Escape Breathing Device (EEED) were conducted in the Environmental Physiology Research

Section contaminant leakage chamber. Sulfur hexafluoride (SF6) challenge was used to determine contaminant leakage; oxygen and carbon dioxide levels, as well as temperature readings, were also obtained. Eight successful tests were conducted with the original neck seal design first used by Scott Aviation in their Crewmember Protective Breathing Equipment, four additional tests were conducted with a proprietary new neck seal designed by S-Tron. The EEBD all performed within test limits. Emergency escape breathing device (EEBD), Contaminant Leakage, U.S. Navy, S-TRON.

AN (1) AD-A252 497/XAG

**FG (2) 010500
130100**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of a Tritium Runway Lighting System.

DN (9) Technical note

AU (10) Katz, Eric S.

RD (11) Apr 1992

PG (12) 22 Pages

RS (14) DOT/FAA/CT-TN92/15

RC (20) Unclassified report

NO (21) original contains color plates: All DTIC and NTIS reproductions will be in black and white.

DE (23) *AIRPORTS, *RUNWAYS, *TRITIUM, *LIGHTING EQUIPMENT AIR, FLIGHT, FLIGHT TESTING, GUARANTEES, OPERATION, PILOTS, SAFETY, NIGHT VISION, REMOTE AREAS, TERMINAL FLIGHT FACILITIES

AB (27) A tritium powered runway lighting system was installed and evaluated at the Federal Aviation Administration (FAA) Technical Center. The purpose of this evaluation was to determine if the tritium runway lighting system would safely support Federal Aviation Regulations (FAR) Part 135 commercial operations, during nighttime visual flight rules (VFR) conditions at remote airports. Subject pilots having flight experience levels appropriate for pilots conducting FAR Part 135 air taxi operations were afforded the opportunity of flight testing the system. Results of the evaluation indicate that the tritium runway lighting system does not meet all of the minimum criteria necessary for FAA approval and, therefore, would not guarantee an acceptable level of safety. Tritium Runway Lighting System, Remote Airports.

AN (1) AD-A256 503/XAG

FG (2) 170703

250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Controller Evaluation of Initial Data Link Terminal Air Traffic Control Services: Mini Study 2. Volume 1.

DN (9) Final rept.

AU (10) Talotta, Nicholas J.

RD (11) Apr 1992

PG (12) 98 Pages

RS (14) DOT/FAA/CT-92-VOL-1

RN (18) XH-DOT/FAA/RD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *DATA LINKS, *INFORMATION TRANSFER CONTROL, DELAY, MANAGEMENT, RESPONSE, TERMINALS, VOLUME, WORKLOAD, CONTROL SYSTEMS, COMMUNICATIONS TRAFFIC

ID (25) ARTS IIIA, Terminal ATC, Data link

AB (27) This document details the results of the second Mini Study of the Federal Aviation Administration (FAA) Technical Center investigation and development of initial terminal air traffic control (ATC) services for transmission using Data Link technology. Initial Data Link services were evaluated under part task simulation conditions in order to identify service delivery methods which optimize controller acceptance, performance, workload, and to study the effects of various potential Data Link message response delays.

AN (1) AD-A257 028/XAG

**FG (2) 170703
250200**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Controller Evaluation of Initial Data Link terminal Air Traffic Control Services: Mini Study 2. Volume 2.

DN (9) Final rept.

AU (10) Talotta, Nicholas J.

RD (11) Apr 1992

PG (12) 124 Pages

RS (14) DOT/FAA/CT-92/2-VOL-2

RN (18) XH-DOT/FAA/RD

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A256 503.

DE (23) *DATA LINKS, *AIR TRAFFIC CONTROL SYSTEMS

DELAY, DOCUMENTS, RESPONSE, SIMULATION, WORKLOAD, DATA
MANAGEMENT, AIR
TRAFFIC CONTROL TERMINAL AREAS

ID (25) Message delivery

AB (27) This document details the results of the second Mini Study of the Federal Aviation Administration (FAA) Technical Center investigation and development of initial terminal air traffic control (ATC) services for transmission using Data Link technology. Initial Data Link services were evaluated under part task simulation conditions in order to identify service delivery methods which optimize controller acceptance, performance, workload, and to study the effects of various potential Data Link message response delays. ARTS IIIA, Terminal ATC, Data Link.

AN (1) AD-A249 123/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) A New Test of Scanning and Monitoring Ability: Methods and Initial
Results

AU (10) Revzin, A. M.
Rasmussen, P. G.

RD (11) Mar 1992

PG (12) 19 Pages

RS (14) DOT/FAA/AM-92/12

RC (20) Unclassified report

DE (23) *MONITORING, *SCANNING, *AIR TRAFFIC CONTROL SYSTEMS
AIR TRAFFIC, ATTENTION, COMPUTERS, CONTROL, ERRORS, FATIGUE,
FUNCTIONS,

IDENTIFICATION, INTERVALS, MICROCOMPUTERS, NOISE, PATTERNS,
PERSONNEL,

PERSONNEL SELECTION, REQUIREMENTS, SELECTION, SEPARATION,
TARGETS,

TRAFFIC, VALIDATION, VARIABLES, VISION

AB (27) Most tasks in the FAA's Air Traffic Control (ATC) system involve long duration scanning and monitoring for continuously changing events occurring within a large visual space. Errors occur, so it is important to understand the causes of such errors to minimize or eliminate them by changing task design or improving personnel selection. This study describes a new system for testing scanning and monitoring abilities. The system, as currently implemented, is basically a character identification task. The characters are presented at random intervals and locations within two or more WorkAreas. The WorkAreas are defined

as rectangular areas on a microcomputer display screen. They are filled with a constantly changing random dot pattern and may be located anywhere on the screen. The subject's task is to press a designated key on the computer keypad when a specified target character appears. Parametric manipulations can evaluate the effects on performance of many variables, including angular separation of WorkAreas, differential workloads in the WorkAreas, and effects of visual noise. We found a highly significant performance decrement as a function of increasing angular separation of WorkAreas. This is congruent with prior studies, which we interpret as a validation of our test procedure. We did not find practice effects, fatigue effects, or selective attention effects between WorkAreas. Vision requirements, Scanning/Monitoring, Medical certification, Air traffic control.

AN (1) AD-A249 124/XAG

FG (2) 050900
060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Survey of Aviation Medical Examiners: Information and Attitudes about
the Pre-Employment and Pre-Appointment Drug Testing Program.

DN (9) Final rept.

AU (10) Myers, Jennifer G.

RD (11) Mar 1992

PG (12) 41 Pages

RS (14) DOT/FAA/AM-92/15

RC (20) Unclassified report

DE (23) *CONTROL, *DRUGS, *SURVEYS

ALCOHOLS, COLLECTION, EMPLOYMENT, ERRORS, KITS, TRAINING, URINE

ID (25) Aviation medical examiners, *Drug testing, Custody, Specimen collection

AB (27) Aviation medical examiners who are designated to collect urine specimens were surveyed to collect information and assess attitudes about different aspects of the pre-employment and pre-appointment drug testing program. Fifty-seven percent of the sample responded to the survey. Respondents were generally positive about the custody and control form, the amount of information received about the collection kits and the drug testing program, and the contacts they had with the agency medical staff. However, only about half reported they had been informed of drug testing program changes. Accurate completion of custody and control forms and lack of training were cited most often as causal factors in the occurrence of errors in the specimen collection process and few had actually received information on their error rate

in specimen collections. Recommendations were made to 1) review the custody and control form for possible improvements that may reduce errors, 2) restrict the number of AMEs designated to collect specimens, 3) provide training classes, materials, or videotapes, especially for newly designated AMES, and 4) clarify the alcohol and drug abatement program manager's position prior to making a decision about the organizational location of the manager. Dimensionality, Validity, Perceptions of Organizational Politics Scale (POPS).

AN (1) AD-A249 125/XAG

FG (2) 050100

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Subordinate Feedback to the Supervisor and Participation in Decision-Making in the Prediction of Organizational Support.

DN (9) Final rept.

AU (10) Witt, L. A.

Hellman, Chan

RD (11) Mar 1992

PG (12) 9 Pages

RS (14) DOT/FAA/AM-92/13

RC (20) Unclassified report

DE (23) *DECISION MAKING, *SUPERVISORS, *ORGANIZATIONS FEEDBACK, HYPOTHESES, MANAGEMENT, PREDICTIONS, VARIABLES

AB (27) The present study tested the hypotheses that participation in decision-making (PDM) and perceived effectiveness of subordinate feedback to the supervisor would contribute unique variance in the prediction of perceptions of organizational support. In line with concerns for dispositional affect as a contributor to method variance and the possibility that biodata may explain some of the effects of PDM and feedback on support, dispositional affect and biodata variables were included in the analyses. Hierarchical regression analyses, conducted on data collected from 1,083 federal government workers, indicated that both feedback and PDM added unique variance to the prediction of support. These findings have implications for both management and research. Subordinate Feedback, Participation, Decision-making, Organizational Support.

AN (1) AD-A249 126/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Prevalence of Artificial Lens Implants in the Civil Airman Population.

DN (9) Final rept.

AU (10) Nakagawara, Van B.

Loochan, Farenoon K.

Wood, Kathryn J.

RD (11) Mar 1992

PG (12) 17 Pages

RS (14) DOT/FAA/AM-92/14

RC (20) Unclassified report

DE (23) *AVIATION PERSONNEL, *SURGICAL IMPLANTATION, *LENS(EYE) EPIDEMIOLOGY, PATHOLOGY, VISION

ID (25) *Aphakia, Medical Certification, Artificial lenses

AB (27) The use of artificial lens implants to correct for aphakia has become increasingly prevalent in the United States. This study analyzes the distribution of intraocular lens (IOL) implants in the civil airman population by type (unilateral, bilateral), class of medical certificate, and gender for a 4-year period (198285). Medical records were evaluated for all certified airmen who were carrying pathology codes for aphakia and artificial lens implant during the study period. The percentage increase in the prevalence of airmen with artificial lenses was higher for bilateral, second-class medical certificate holders, and female aphakics. However, the incidence of total and unilateral artificial lens implants declined in 1985. The implications of the study's findings for aeromedical certification are discussed. A change in the methods used to evaluate trends in the use of IOL in the airman population is recommended. Vision, Epidemiology, Aphakia, Lens, Intraocular, Medical certification.

AN (1) AD-A249 487/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A New Test of Scanning and Monitoring Ability: Methods and Initial Results.

DN (9) Interim rept.

AU (10) Revzin, A. M.

Rasmussen, P. G.

RD (11) Mar 1992

PG (12) 20 Pages
RS (14) DOT/FAA/AM-92/12
RC (20) Unclassified report
DE (23) *AIR TRAFFIC, *MONITORING, *SCANNING
ATTENTION, COMPUTERS, CONTROL, ERRORS, FATIGUE, FUNCTIONS,
IDENTIFICATION, INTERVALS, MICROCOMPUTERS, NOISE, PATTERNS,
PERSONNEL,
PERSONNEL SELECTION, REQUIREMENTS, SELECTION, SEPARATION,
TARGETS, TEST
AND EVALUATION, TRAFFIC, VALIDATION, VARIABLES, VISION, WORKLOAD
AB (27) Most tasks in the FAA's Air Traffic Control (ATC) system involve long
duration scanning and monitoring for continuously changing events
occurring within a large visual space. Errors occur, so it is important
to understand the causes of such errors to minimize or eliminate them
by changing task design or improving personnel selection. This study
describes a new system for testing scanning and monitoring abilities.
The system, as currently implemented, is basically a character
identification task. The characters are presented at random intervals
and locations within two or more WorkAreas. The WorkAreas are defined
as rectangular areas on a microcomputer display screen. They are filled
with a constantly changing random dot pattern and may be located
anywhere on the screen. The subject's task is to press a designated key
on the computer keypad when a specified target character appears.
Parametric manipulations can evaluate the effects on performance of
many variables, including angular separation of WorkAreas, differential
workloads in the WorkAreas, and effects of visual noise. We found a
highly significant performance decrement as a function of increasing
angular separation of WorkAreas. This is congruent with prior studies,
which we interpret as a validation of our test procedure. We did not
find practice effects, fatigue effects, or selective attention effects
between WorkAreas. Vision Requirements, Scanning/Monitoring, Medical
Certification, Air Traffic Control.

AN (1) AD-A249 805/XAG
FG (2) 050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) Effects of Subordinate Feedback to the Supervisor and Participation in
Decision-Making in the Prediction of Organizational Support
AU (10) Witt, L. A.
Hellman, Chan
RD (11) Mar 1992

PG (12) 10 Pages
RS (14) DOT/FAA/AM-92/13
RC (20) Unclassified report
DE (23) *DECISION MAKING, *PARTICIPATIVE MANAGEMENT
FEEDBACK, HYPOTHESES, PERCEPTION, PREDICTIONS, SUPERVISORS
ID (25) *Subordinate feedback, Organizational support, Biodata, Hierarchical
regression analyses
AB (27) The present study tested the hypotheses that participation in
decision-making (PDM) and perceived effectiveness of subordinate
feedback to the supervisor would contribute unique variance in the
prediction of perceptions of organizational support. In line with
concerns for dispositional affect as a contributor to method variance
and the possibility that biodata may explain some of the effects of PDM
and feedback on support, dispositional affect and biodata variables
were included in the analyses. Hierarchical regression analyses,
conducted on data collected from 1,083 federal government workers,
indicated that both feedback and PDM added unique variance to the
prediction of support. These findings have implications for both
management and research. Subordinate Feedback, Participation
Decision-making, Organizational Support.

AN (1) AD-A249 806/XAG
FG (2) 060500
050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) Survey of Aviation Medical Examiners: Information and Attitudes about
the Pre-Employment and Pre-Appointment Drug Testing Program
AU (10) Myers, Jennifer G.
RD (11) Mar 1992
PG (12) 41 Pages
RS (14) DOT/FAA/AM-92/15
RC (20) Unclassified report
DE (23) *SURVEYS, *ATTITUDES(PSYCHOLOGY)
ALCOHOLS, COLLECTION, CONTROL, DRUGS, ERRORS, KITS, MATERIALS,
PERCEPTION, TRAINING, URINE, EMPLOYMENT
ID (25) *Drug testing, Aviation medical examiners, Specimens
AB (27) Aviation medical examiners who are designated to collect urine
specimens were surveyed to collect information and assess attitudes
about different aspects of the pre-employment and pre-appointment drug
testing program. Fifty-seven percent of the sample responded to the
survey. Respondents were generally positive about the custody and

control form, the amount of information received about the collection kits and the drug testing program, and the contacts they had with the agency medical staff. However, only about half reported they had been informed of drug testing program changes. Accurate completion of custody and control forms and lack of training were cited most often as causal factors in the occurrence of errors in the specimen collection process and few had actually received information on their error rate in specimen collections. Recommendations were made to 1) review the custody and control form for possible improvements that may reduce errors, 2) restrict the number of AMEs designated to collect specimens, 3) provide training classes, materials, or videotapes, especially for newly designated AMES, and 4) clarify the alcohol and drug abatement program manager's position prior to making a decision about the organizational location of the manager. Dimensionality, Validity, Perceptions of Organizational Politics Scale (POPS).

AN (1) AD-A250 854/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Comparison of the Performance of a Microwave Landing System Elevation Station with the Instrument Landing System End-Fire Glide Slope at Yeager Airport, Charleston, West Virginia.

DN (9) Technical note for period ending Apr 91

**AU (10) Mackin, Clifford
Zyzys, Edmund**

RD (11) Mar 1992

PG (12) 29 Pages

RS (14) DOT/FAA/CT-TN91/22

RC (20) Unclassified report

**DE (23) *INSTRUMENT LANDINGS, *MICROWAVE LANDING SYSTEMS
AIRCRAFT, AIRPORTS, ANTENNAS, APPROACH, AZIMUTH, COMPARISON,
COMPUTERS,
DEMONSTRATIONS, ELEVATION, FLIGHT, GLIDE SLOPE, INSPECTION,
INSTALLATION, LANDING, MICROWAVES, NAVIGATION, ORBITS, RUNWAYS,
SITES,
SLOPE, STATIONS, TERRAIN, TEST BEDS, TEST AND EVALUATION, URBAN
AREAS,
VALLEYS, VIRGINIA, WEST VIRGINIA**

AB (27) In support of Project No. 5 of the Federal Aviation Administration (FAA) microwave Landing System (MLS) Demonstration and Evaluation Program, Comparison of MLS and Instrument Landing System (ILS) Performance, the FAA Technical Center installed an MLS elevation

station collocated with the ILS basic end-fire glide slope (EFGS) serving runway 23 at Yeager Airport, Charleston, West Virginia. The EFGS is the only type of ILS glide slope antenna that will provide operationally usable performance at the site because of limited flat terrain in front of the antenna and a valley with rising hills in the approach to the runway. The FAA Technical Center's MLS test bed, consisting of a 1.5 deg beamwidth elevation station and a 2 deg beamwidth azimuth station, was transported to, and temporarily installed at Yeager Airport on runway 23. Only the MLS elevation was collocated with the commissioned ILS EFGS. The azimuth station was not collocated with the localizer for siting reasons. The MLS installation did not affect the performance of the ILS as verified by a flight check by the Atlantic City Flight Inspection Field Office (FIFO). During ground tracked partial orbits and inbound level runs and approaches, both ILS and MLS data were simultaneously recorded in the FAA Technical Center instrumented aircraft, a Convair-580, N-49. End-Fire Glide Slope (EFGS), Instrument Landing System (ILS), Microwave Landing System (MLS), Yeager Airport, Charleston, WV.

AN (1) AD-A250 856/XAG

**FG (2) 170703
010500**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) MLS Mathematical Modeling Study of Philadelphia International Airport Runway 27L.

DN (9) Technical note Mar-Nov 91

AU (10) Pasquale, Linda

RD (11) Mar 1992

PG (12) 24 Pages

RS (14) DOT/FAA/CT-TN91/54

RC (20) Unclassified report

DE (23) *AIRPORTS, *MICROWAVE LANDING SYSTEMS, *AIR TRAFFIC CONTROL SYSTEMS

**AIRCRAFT, APPROACH, AZIMUTH, ELEVATION, ENVIRONMENTS,
INTERNATIONAL
AIRPORTS, LANDING, MICROWAVES, RUNWAYS, SEPARATION, SIGNALS, SITES,
VOLUME, MATHEMATICAL MODELS, ERROR ANALYSIS**

ID (25) Philadelphia International Airport

AB (27) A mathematical modeling study of the proposed Microwave Landing System (MLS) for runway 27L at Philadelphia International Airport was performed at the request of the MLS Program Office. The study focused on the feasibility of three offset approaches designed to maintain

acceptable separation distance from aircraft approaching runway 27R. Modeling was performed using these three approaches, two elevation sites, one azimuth site, and several potential multipath obstacles. Results of the modeling study indicate that the three offset approach procedures would be feasible in this environment. No problematic effects from the airport environment were predicted within the usable coverage volume of the MLS signal. MLS Mathematical Modeling, Microwave Landing System, Mathematical Modeling.

AN (1) AD-A253 798/XAG

FG (2) 010500

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Helicopter Nighttime Parking Test Results - UH-1H.

DN (9) Technical note

AU (10) Weiss, Rosanne M.

RD (11) Mar 1992

PG (12) 68 Pages

RS (14) DOT/FAA/CT-TN92/1

RC (20) Unclassified report

DE (23) *HELICOPTERS, *PARKING FACILITIES

CLEARANCES, CROSSWINDS, DAYLIGHT, DOCUMENTS, HEAD(ANATOMY), HELIPORTS,

LIGHT, LIMITATIONS, MANAGEMENT, NIGHT, PILOTS, QUESTIONNAIRES, RATINGS,

ROTORS, SEPARATION, SURFACES, TEST AND EVALUATION, VISION, NIGHT LANDINGS, FLIGHT TESTING, TABLES(DATA), LOG PERIODIC STRUCTURE,

INTERNATIONAL AIRPORTS, FLIGHT MANEUVERS, VISUAL FLIGHT RULES, VISUAL

PERCEPTION

ID (25) UH-1H Aircraft, H-1 Aircraft

AB (27) Flight tests had previously been conducted at the Federal Aviation Administration (FAA) Technical Center to examine issues regarding rotortip separation in ground maneuver areas at heliports. Technical Note DOT/FAA/CT-TN88/30, Heliport Surface Maneuvering Test Results, details the results of those tests. However, those tests were conducted under visual flight conditions (VFR) daylight conditions. Given the limitations of scopic vision, it was determined that nighttime testing was needed to determine whether pilot parking separation performance and perception deteriorates under night, low ambient light conditions. This report documents the results of nighttime parking tests conducted at the Technical Center between January 1989 to August 1989. Over 100

parking maneuvers were conducted using a UH-1H helicopter. All were conducted under head, tail, and crosswind conditions, with an unlit and a lit obstacle and without an obstacle in place. Pilot subjective data in reference to these maneuvers were collected via post-maneuver ratings and post-flight questionnaire. Heliport Parking, Rotor Tip Clearances, UH-1H Helicopter.

AN (1) AD-A255 741/XAG

FG (2) 210500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Statistics on Aircraft Gas Turbine Engine Rotor Failures That Occurred in U.S Commercial Aviation During 1988.

DN (9) Final rept.

AU (10) Delucia, R. A.

Fenton, B. C.

Chapdelaine, E. R.

RD (11) Mar 1992

PG (12) 30 Pages

RS (14) DOT/FAA/CT-91/28

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FAILURE, *GAS TURBINES, *AIRCRAFT ENGINES

AIR, AIR TRANSPORTATION, AIRCRAFT, BENEFITS, BLADES, COMMERCIAL AVIATION, COSTS, DISKS, ENGINES, FLIGHT, FRAGMENTS, HAZARDS, ROTORS, SAFETY, STANDARDS, TAKEOFF, TRANSPORTATION, TURBINES

AB (27) This report presents statistical information relating to gas turbine engine rotor failures which occurred during 1988 in U.S. commercial aviation service use. Four hundred and thirteen failures occurred in 1988. Rotor fragments were generated in 175 of the failures, and of these 14 were uncontained. The predominant failure involved blade fragments, 95 percent of which were contained. Five disk failures occurred and all were uncontained. Forty-two percent of the 413 failures occurred during the takeoff and climb stages of flight. This service data analysis is prepared on a calendar year basis and published yearly. The data are useful in support of flight safety analyses, proposed regulatory actions, certification standards, and cost benefit analyses. Air Transportation, Aircraft Hazards, Aircraft Safety, Gas Turbine Engine Rotor Failures, Containment.

AN (1) AD-A246 588/XAG

FG (2) 050900

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Gender, Equity, and Job Satisfaction.

DN (9) Final rept.

AU (10) Witt, L. A.

Nye, Lendell G.

RD (11) Feb 1992

PG (12) 12 Pages

RS (14) DOT/FAA/AM-92/9

RC (20) Unclassified report

DE (23) BEHAVIOR, EXCHANGE, JOB SATISFACTION, ORGANIZATIONS, TEAMS(PERSONNEL),

THEORY, WOMEN, WORK

ID (25) *Equity, *Job satisfaction, *Gender differences, Job attitudes

AB (27) Although equity theory has served as a theoretical framework applying to most individuals in most situations, empirical research suggests that gender may affect the utility of equity theory in explaining organizational behaviors. Studies have indicated that men are lost likely than women to distribute outcomes to individuals in direct proportion to their input. This gender difference has brought about considerable research interest and concern for implications in work groups and in supervisor-subordinate interactions. Brockner and Adsit (1986) noted an important but untested implications that the equity norm is more salient for men than it is for women. They argued that men's satisfaction with an exchange relationship should be influenced by the presence or absence of equity more so than women's satisfaction. They reported data indicating that the equity-satisfaction relationship was considerably stronger among men than among women. The Brockner and Adsit (1986) finding has an important implication for organizations theory, namely that equity perceptions may be more salient among men than women in the development of job satisfaction. Replication of their findings would suggest a need for further research in this area and a possible utility of different strategies for managing men and women for purposes of promoting job satisfaction with a focus on equity-related issues and antecedents.

AN (1) AD-A247 620/XAG

FG (2) 050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Dimensionality and Construct Validity of the Perceptions of Organizational Politics Scale (POPS).

DN (9) Final rept.

AU (10) Nye, Lendell G.

Witt, L. A.

RD (11) Feb 1992

PG (12) 9 Pages

RS (14) DOT/FAA/AM-92/10

RC (20) Unclassified report

DE (23) *JOBS, *ATTITUDES(PSYCHOLOGY)

GOVERNMENT EMPLOYEES, STRUCTURES, SURVEYS

AB (27) This study examined the dimensionality and construct validity of Kacmar and Ferris (1991) Perceptions of Organizational Politics Scale (POPS), which is comprised of 3 subscales -- General Political Behavior, Going Along to Get Ahead, and Pay and Promotion. Results of analyses conducted on data collected from 1,297 civilian government employees were inconsistent with a multidimensional factor structure of the POPS. Principal components and confirmatory factor analyses failed to confirm the Kacmar and Ferris 3-factor solution. Rather, the results indicated that the POPS was unidimensional. POPS scores were strongly and inversely related to scores on the Eisenberger, Huntington, Hutchison, and Sowa (1986) Survey of Perceived Organizational Support (SPOS). POPS and SPOS scores were not differentially correlated with other job attitude measures. Dimensionality, Validity, Perceptions of Organizational Politics Scale (POPS).

AN (1) AD-A247 621/XAG

FG (2) 050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Organizational Goal Congruence and Job Attitudes Revisited

AU (10) Witt, L. A.

Nye, Lendell G.

RD (11) Feb 1992

PG (12) 9 Pages

RS (14) DOT/FAA/AM-92/8

RC (20) Unclassified report

DE (23) *JOB SATISFACTION, *ATTITUDES(PSYCHOLOGY)

INDEXES, JOBS, ORGANIZATIONS, SCALE, WORK

AB (27) Vancouver and Schmitt (1991) operationalized person-organization fit in

terms of goal congruence and reported that goal congruence scores were positively related to favorable job attitudes. The purpose of the present study was to replicate and extend their work. Specifically, we sought to: (1) replicate their findings of goal congruence scores as predictors of job satisfaction and organizational commitment; (2) determine if goal congruence scores were related to perceptions of organizational support and organizational politics; and (3) assess the extent to which goal congruence scores accounted for variance in job satisfaction and organizational commitment beyond that contributed by scores on the Eisenberger et al. (1986) perceptions of organizational support scale and the Kacmar and Ferris (1991) perceptions of organizational politics scale. Data collected from 991 FAA employees indicated that goal congruence scores were positively related to favorable job attitudes, as found by Vancouver and Schmitt (1991). However, the partialing out of organizational support and organizational politics scores from the relationships of goal congruence with job satisfaction and commitment accounted for most of the variance. These results have implications for the use of goal congruence as an index of person-organization fit and perhaps as well for the importance of the notion of person-organization fit. Job Satisfaction, Goal Congruence, Organizational Politics, Organizational Support, Organizational Commitment.

AN (1) AD-A247 699/XAG
 FG (2) 050800
 CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
 MEDICINE
 TI (6) Confirmatory Factor Analysis of Burnout Dimensions: Correlations with Job Stressors and Aspects of Social Support and Job Satisfaction.
 DN (9) Final rept.
 AU (10) Nye, Lendell G.
 Witt, L. A.
 Schroeder, David
 RD (11) Feb 1992
 PG (12) 9 Pages
 RS (14) DOT/FAA/AM-92/7
 RC (20) Unclassified report
 DE (23) *JOB SATISFACTION, *STRESS(PSYCHOLOGY)
 BURNOUT, HUMANS, JOBS, MANAGEMENT, MODELS, SAFETY, EXHAUSTION(PSYCHOLOGICAL)
 ID (25) *Job stress, Social support, Emotional exhaustion, Depersonalization
 AB (27) This study examined the dimensionality and construct validity of

Golembiewski, Munzenrider, and Stevenson (1986) revision of the Maslach and Jackson (1981) Maslach Burnout Inventory (MBI). Results of confirmatory factor analyses conducted on data collected from 357 FAA employees in a technical, safety-related occupation provided support for a 3-factor, correlated model of burnout. The results suggest that the three factors (emotional exhaustion, depersonalization, and personal accomplishment) were differentially correlated with organizational phenomena of interest. These findings extend the literature beyond analyses on human service type workers and suggest the utility of developing and implementing different strategies for management interventions to respond to different manifestations of employee burnout. Burnout, Job Stress, Social Support, Job Satisfaction.

AN (1) AD-A247 701/XAG
 FG (2) 050900
 050800
 060500
 CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
 MEDICINE
 TI (6) A Candidate Automated Test Battery for Neuropsychological Screening of Airmen: Design and Preliminary Validation
 AU (10) O'Donnell, Robert D.
 Hordinsky, Jerry R.
 Madakasira, Sudahar
 Moise, Samuel
 Warner, Debr
 RD (11) Feb 1992
 PG (12) 18 Pages
 RS (14) DOT/FAA/AM-92/11
 RC (20) Unclassified report
 DE (23) *AVIATION PERSONNEL, *MEDICAL EXAMINATION, *PSYCHOLOGICAL TESTS
 BACKGROUND, FUNCTIONS, MANAGEMENT, ORGANIZATIONS, OUTPUT, PANELS,
 PHYSICIANS, RESPONSE, SENSITIVITY, THEORY, VALIDATION
 ID (25) Neurological screening, *Physical examination, Psychiatric screening, Mental status examination, Computerized tests
 AB (27) A panel of the American Medical Association convened by the Federal Aviation Administration recommended that a computerized test of cognitive function be developed that would detect significant cognitive impairments that might otherwise go unrecognized during a routine physical examination. In response to this need, a computerized test

battery, based on current cognitive theory, has been developed that provides a brief screening for disturbances in higher-level cognitive function. This battery is not designed to replace the traditional observational methods used by the physician, but rather to enhance diagnostic sensitivity in areas not currently well covered. The battery operates in a 'step fashion, providing a generalized, non-specific screen at the first level, with two increasingly more specific screens if that level is failed. The output of the battery is a verbal protocol to the examiner presenting a series of rule out recommendations for further diagnostic testing. In this report, the background and composition of this test are described, and the results of three initial validation and sensitivity studies are reported. Neurological screening, Computerized test, Physical examination, Psychiatric screening, Mental status examination.

AN (1) AD-A249 436/XAG
FG (2) 010500
050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) Allocation and Recovery of Federal Airport and Airway Costs, 1991.

DN (9) Final rept.

AU (10) Taylor, Daniel E.

RD (11) Feb 1992

PG (12) 24 Pages

RS (14) FAA/APO-210, FAA/APO-91-4

RC (20) Unclassified report

DE (23) *AIRPORTS, *FINANCE, *TAXES, *COST ANALYSIS
ALLOCATIONS, RECOVERY

ID (25) Airway, General aviation, Federal aviation administration

AB (27) This report presents estimates of the allocation and recovery of Federal airport and airway system costs. Estimates for 1991 were constructed using an econometric model that attributes fixed, joint, and marginal airspace system costs to aviation user groups. Two methods are used to allocate FAA costs. First, a full cost allocation attributes direct costs to each user and allocates all remaining joint and overhead costs among users. Second, a minimum cost allocation estimate is made for general aviation based on the concept of avoidable costs. The results of the full cost allocation indicate that about 62 percent of FAA costs in 1991 are attributable to air carriers. General aviation and the public sector accounted for 26 and 12 percent of FAA costs, respectively. Public Finance, Airport and Airway system, Cost

allocation, Cost recovery aviation user taxes.

AN (1) AD-A250 412/XAG

FG (2) 010500

050100

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) FAA Aviation Forecasts.

RD (11) Feb 1992

PG (12) 280 Pages

RS (14) FAA-APO-92-1

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *AIRPORTS, *FORECASTING, *AIR CONTROL CENTERS,
*ECONOMIC

ANALYSIS, *AIR TRAFFIC CONTROL SYSTEMS, *PLANNING PROGRAMMING
BUDGETING

FUEL CONSUMPTION, CIVIL AVIATION, COMMERCIAL AVIATION, NAVAL
AVIATION,

MARINE CORPS AVIATION, AIR TRAFFIC CONTROL TERMINAL AREAS,
AIRCRAFT,

WORKLOAD, AIRPORT CONTROL TOWERS, HELICOPTERS, ARMY AVIATION,
STATISTICS

ID (25) Air carriers, Federal aviation administration

AB (27) This report contains forecasts of aviation activity at Federal Aviation

Administration facilities. These include airports with FAA control
towers, air route traffic control centers, and flight service stations.

Detailed forecast were made for the major users of the National
Aviation System: air carriers, air taxi/commuters, military and general
aviation. The forecasts have been prepared to meet the budget and
planning needs of the constituent units of the FAA and to provide
information that can be used by state and local authorities, the
aviation industry, and the general public. The lethargy of the domestic
and international economies over the past year have caused the aviation
industry to experience its worst year ever. However, the outlook for
the 12-year forecast period is for moderate economic growth, stable
real fuel prices, and moderate inflation. Based on these assumptions,
aviation activity by fiscal year 2003 is forecast to increase by 25.7
percent at towered airports, 28.3 percent air route traffic control
centers, and 4.8 percent in flight services performed. Hours flown by
general aviation are forecast to increase 15.1 percent and domestic
revenue passenger miles (RPM's) are forecast to increase 54.9 percent,

with scheduled international RPM's forecast to increase by 112.8 percent and regional/commuter RPM's forecast to increase by 146.5 percent.

AN (1) AD-A251 211/XAG

**FG (2) 170703
120500**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) MLS and DME/P Multipath Simulation Model User's Manual. Volume 1. Operating Instructions.

DN (9) Technical note for period ending Sep 91.

RD (11) Feb 1992

PG (12) 130 Pages

RS (14) DOT/FAA/CT-TN91/47-VOL-1

RC (20) Unclassified report

DE (23) *MATHEMATICAL MODELS, *MICROWAVE LANDING SYSTEMS, *COMPUTERIZED

SIMULATION, *MULTIPATH TRANSMISSION, *USER MANUALS, *DISTANCE MEASURING

EQUIPMENT

DISTANCE MEASURING EQUIPMENT, INPUT, INSTRUCTIONS, MODEL THEORY, MODELS, OUTPUT, PARAMETERS, PROPAGATION, SIMULATION, THEORY,

VOLUME,

OPERATION

ID (25) DMG/P(Precision Distance Measuring Equipment)

AB (27) This is Volume I of the MLS and DME/P Multipath Simulation Model User's Manual. The complete user's manual consists of three volumes as follows: Volume (1) - Operating Instructions Volume (2) - Propagation Model Theory Volume (3) - System Model Theory This volume includes descriptions of the model, both general and detailed; discussion of the input parameters and creation of the input file; instructions for operating each program of the model; discussion of the various options available for a given simulation; and descriptions of the output tables, plots, and files produced by each program. A sample input file and a set of the resulting output plots and tables are included. MLS, Simulation, DME/P, Mathematical Model.

AN (1) AD-A245 508/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Radiation Exposure of Air Carrier Crewmembers. 2.

DN (9) Final rept.

AU (10) Friedberg, Wallace

Snyder, Lorrenza

Faulkner, Donald N.

Darden, Edgar B., Jr.

O'Brien, Keran

RD (11) Jan 1992

PG (12) 19 Pages

RS (14) DOT/FAA/AM-92/2

RC (20) Unclassified report

DE (23) ADULTS, AIR TRANSPORTATION, ALTITUDE, CARGO, COSMIC RAYS, CREWS, DOSAGE, ENVIRONMENTS, EXPOSURE(GENERAL), EXPOSURE(PHYSIOLOGY),

FLIGHT,

GALAXIES, HEALTH, LIMITATIONS, RADIATION, RADIATION PROTECTION, RADIOACTIVITY, RISK, UNITED STATES

ID (25) *Cosmic radiation, Air craft carriers, Galactic cosmic radiation, Solar cosmic radiation, Air crews, Air carrier crewmembers, *Pregnant crewmembers

AB (27) The cosmic radiation environment at air carrier flight altitudes is described and estimates given of the amounts of galactic cosmic radiation received on a wide variety of routes to and from, and within the contiguous United States. Radiation exposure from radioactive air cargo is also considered. Methods are provided to assess health risks from exposure to galactic radiation. On the flights studied, the highest dose of galactic radiation received annually by a crewmember who worked as many as 1,000 block hours a year would be less than half the annual limit recommended by the International Commission on Radiological Protection for a nonpregnant occupationally exposed adult. The radiation exposure of a pregnant crewmember who worked 70 block hours a month for 5 months would exceed the recommended 2-millisievert pregnancy limit on about one-third of the flights.

AN (1) AD-A245 509/XAG

**FG (2) 060500
050200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Index of FAA Office of Aviation Medicine Reports: 1961-1991.

DN (9) Final rept.

AU (10) Collins, William E.

Wayda, Michael E.
RD (11) Jan 1992
PG (12) 68 Pages
RS (14) DOT/FAA/AM-92/1
RC (20) Unclassified report
DE (23) *AVIATION MEDICINE, *INDEXES
RESEARCH FACILITIES, RESEARCH MANAGEMENT
ID (25) Office of Aviation Medicine Reports, Civil aeromedical research
institute reports, Research reports

AN (1) AD-A246 445/XAG
FG (2) 010305
230200
201100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Human Factors Evaluation of the Work Environment of Operators Engaged
in the Inspection and Repair of Aging Aircraft

AU (10) Thackray, Richard I.
RD (11) Jan 1992
PG (12) 16 Pages
RS (14) DOT/FAA/AM-92/3
RC (20) Unclassified report
DE (23) AGING(MATERIALS), AIR TRANSPORTATION, AIRCRAFT, ENGINEERING,
ENVIRONMENTS, GLOBAL, HUMAN FACTORS ENGINEERING, ILLUMINATION,
JOBS,

LEVEL(QUANTITY), RATINGS, REPAIR, REPAIR SHOPS, SAFETY, SITES,
SOCIETIES, SPACE(ROOM), TEST AND EVALUATION, WORK

ID (25) *Transport aircraft, Aircraft maintenance, Repair stations, *Human
factors engineering, *Work environment, Site evaluations, Illumination
levels, Flight standards aging fleet evaluation program

AB (27) Site evaluations of air carriers and repair stations conducting
inspections and heavy maintenance on PART 121 aging aircraft were
conducted during 1989-90 under the FAA's Office of Flight Standards
Aging Fleet Evaluation Program. This report presents the findings of
the human factors portion of this program in which aspects of the work
environment of selected operators were evaluated with respect to
illumination levels, noise, temperature/ventilation, work support
equipment/workspace adequacy, occupational safety, and extent of worker
overtime. Data are reported for 19 site evaluations. While 89 percent
of the operators were given global ratings of acceptable or better in
the area of human factors, the deficiencies noted were quite consistent

across carriers and repair stations. Illumination levels, in
particular, were found to be considerably below levels recommended by
the Illuminating Engineering Society. There were also deficiencies in
work support equipment and in compliance with the operator's stated
safety program. Recommendations are given for improvements in each of
these areas.

AN (1) AD-A246 586/XAG
FG (2) 010500
060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Effects of Color Vision Deficiency on Detection of Color-Highlighted
Targets in a Simulated Air Traffic Control Display.

DN (9) Final rept.

AU (10) Mertens, Henry W.
Thackray, Richard I.
Touchstone, Mark

RD (11) Jan 1992
PG (12) 11 Pages
RS (14) DOT/FAA/AM-92/6
RC (20) Unclassified report
DE (23) ADVERSE CONDITIONS, AIR SPACE, AIRCRAFT, BRIGHTNESS, COLOR
CODING,
COLOR VISION, COLORS, CONTROL, DEFICIENCIES, DETECTION,
DISCRIMINATION,
DISPLAY SYSTEMS, GREEN(COLOR), INTERACTIONS, INTRUSION, LIGHT,
LIGHTWEIGHT, LUMINANCE, REDUCTION, RED(COLOR), SENSITIVITY, TARGETS

ID (25) *Air traffic control terminal areas, *Color vision, *Color displays,
Color coding, Deficiencies, Performance(Human), Response

AB (27) The present study sought to evaluate the effects of color vision
deficiency on the gain in conspicuity that is realized when
color-highlighting is added as a redundant cue to indicate the presence
of unexpected, nontracked aircraft intruding in controlled airspace.
Sixteen subjects with severe color vision deficiency of both protan and
deutan types and eight subjects with normal color vision performed a
simulated high-workload air traffic control task over a 1-hour period.
Displayed information was normally green. In addition to the primary
task, subjects also monitored for occasional intrusions by light
aircraft identifiable on the basis of triangular shape alone or with
the color red added as a redundant cue. The luminance of the red color
was also 30% higher. Detection of red targets was slightly slower than

detection of green targets in protans. In contrast, detection was faster with red targets for both normals and deutan subjects. Impairment in performance of the severe protans with red highlighting was attributed to their well known reduced sensitivity to red light. Although severe deutans have reduced color discrimination, they do not usually have reduced sensitivity, and their performance was probably enhanced by the greater brightness of red targets. These results demonstrate that the approach of using color always as a redundant cue to ensure performance of color deficient, is valuable, but the potential for adverse interaction of color coding with color deficiency must always be considered.

AN (1) AD-A246 587/XAG

FG (2) 050900

050600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Evaluation of an Alternative Method for Hiring Air Traffic Control Specialists with Prior Military Experience.

DN (9) Final rept.

AU (10) Manning, Carol A.

Aul, Jay C.

RD (11) Jan 1992

PG (12) 19 Pages

RS (14) DOT/FAA/AM-92/5

RC (20) Unclassified report

DE (23) AIR TRAFFIC CONTROLLERS, COMPARISON, CONTROL SYSTEMS, DECISION MAKING,

FACILITIES, FAILURE, LOSSES, MEDICINE, PERFORMANCE TESTS, QUALIFICATIONS, RATES, RATINGS, RECORDS, SCORING, SECURITY,

SELECTION,

SUPERVISORS, TRAINING

ID (25) Selection, *Personnel selection, *Program evaluation, *Prior experience, *Air traffic control

AB (27) This study was conducted to assess and Federal Aviation Administration program to hire former military air traffic control specialists to enter Air Traffic Control field training directly without first attending the Academy screening program. Selection of military controllers was based on meeting prehire qualifications, subject matter expert ratings of ATC training and experience, supervisor recommendations, and final decisions of selecting officials. Selection of comparison group of Academy graduates was based upon selection test

scores, age, work experience, and medical and security qualifications.

Facility assignments for military controllers were partly based on prior experience. Academy graduates' facility assignments were partly based on Academy performance. Training records were obtained for 538 military controllers who entered field training as part of the special hiring program conducted in 1988. Their training status and other performance measures were compared with those for 1605 candidates who entered the Academy between January and December 1988. Academy entrants had a 36% loss rate, which was typical for this second-stage selection procedure. Facility assignments differed for the two groups; 89% of military hires were assigned to terminal facilities while only 31% of academy graduates received terminal assignments. The 1024 Academy graduates and the GS-9 military hires had statistically equivalent failure rates from field training at their first facility (13% loss for Academy graduates as compared with 20% for GS-9 military hires in the terminal option; both groups had a 21% loss rate in the en route option). However, a substantial percentage of both groups have not yet completed their training; thus, increase in loss rates may occur later.

AN (1) AD-A247 175/XAG

FG (2) 200100

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Exposures from Headset Interference Tones.

DN (9) Final rept.

AU (10) May, Noal D.

RD (11) Jan 1992

PG (12) 16 Pages

RS (14) DOT/FAA/AM-92/4

RC (20) Unclassified report

DE (23) *HEARING, *INTERFERENCE, *SOUND PRESSURE, *EXPOSURE(PHYSIOLOGY), *AUDIO

TONES

AIR TRAFFIC CONTROLLERS, ACOUSTICS, AIR, AIR TRAFFIC, CONTROL, EAR, INSERTS, LABORATORIES, PILOTS, POWER, POWER LEVELS, PRESSURE,

SIGNALS,

SOUND, TIME, TRAFFIC, VOLUNTEERS, WEAR, EARPHONES, THRESHOLDS(PHYSIOLOGY)

ID (25) Headsets

AB (27) This study evaluated the acoustic characteristics of interference tones as experienced by FAA Air Traffic Control Specialists (ATCS's) and

pilots who wear headsets with insert type ear pieces. The Sound Pressure Levels (SPL's) of generated tones were measured through the headset at five randomly selected ATCS positions in each of seven Air Route Traffic Control Centers (ARTCC's). The SPL's were compared within and between four frequencies (.5, 1, 2, and 3 KHz) over ten discrete signal power levels. The comparisons demonstrated that SPL's of tones could not be predicted for ARTCC's or for positions within an ARTCC, and that the durations of exposure were brief, i.e. limited to the time needed to remove the headset earpiece from the ear canal. Potential amounts of temporary threshold shifts (TTS's) also were evaluated in a laboratory by checking hearing levels following exposures to tones played with ATCS/pilot communication through the same headset. Audiometric checks of 20 volunteer subjects indicated TTS could be detected following 1 KHz/114 dB/60 and 145 seconds, 2 KHz/108 dB/60 and 145 seconds, and 3 KHz/99 dB/145 seconds exposures, when hearing checks were made within the first 15 minutes. Such extended durations are highly unlikely for pilots and ATCS's and no TTS was detectable following exposures to shorter durations or to other frequencies with equivalent durations. headset, interference tones, insert type headset, hearing, threshold shifts.

- AN (1) AD-A247 700/XAG
- FG (2) 010500
170703
- CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
- TI (6) Visual Approach Data Collection at San Francisco International Airport (SFO).
- DN (9) Final rept. 9 Nov 89-12 Mar 90
- AU (10) Richards, Kathy M.
Transue, Amy E.
Timoteo, Dominic
- RD (11) Jan 1992
- PG (12) 48 Pages
- RS (14) DOT/FAA/CT-90/23
- RC (20) Unclassified report
- DE (23) *APPROACH, *AIR TRAFFIC CONTROL SYSTEMS, *VISUAL FLIGHT RULES ACCURACY, AIRCRAFT, AIRPORTS, BAYS, COLLECTION, CONTROL, DATA REDUCTION, ERRORS, INTERNATIONAL, INTERNATIONAL AIRPORTS, PERSONNEL,
RADAR, REDUCTION, RUNWAYS, SECONDARY, SOURCES, STANDARDS, SURVEILLANCE,
TERMINALS

AB (27) Data on aircraft executing simultaneous visual approaches to parallel runways 28R and 29L were collected at San Francisco International Airport (SFO) between November 9, 1989 and March 12, 1990. The purpose of data collection was to analyze the navigational characteristics of aircraft flying the fly visual segment of the approach. Aircraft position data were collected using the in-place Bay Terminal Radar Approach Control Facility (TRACON) Airport surveillance primary and secondary radars. Data Reduction and limited analysis were done at the Federal Aviation Administration (FAA) Technical Center by ATC Technology Branch (ACD-340) personnel. The discussion in this concerns the accuracy of the collected position data and possible sources of error in the data collection. The reduced data will be sent to the Standards Development Branch (AVN-540) for further analysis. AVN-540 will conduct the final analysis of the data and report on their findings and recommendations. Visual Approaches, San Francisco International Airport.

- AN (1) AD-A266 043/XAG
- FG (2) 010600
010500
050900
- CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
- TI (6) FAA Air Traffic Activity.
- DN (9) Statistical rept. 01 Oct 91-30 Sep 92
- AU (10) Trembley, Nancy
- RD (11) 1992
- PG (12) 252 Pages
- RN (18) XH-XD
- RC (20) Unclassified report
- AL (22) Availability: U.S. Gov't. Printing Office, Washington, DC 20402. PC \$15.00. Microfiche furnished to DTIC and NTIS users.
- DE (23) *AIR TRAFFIC, *AIRPORTS, *CONTROL CENTERS, *CIVIL AVIATION, *GROWTH(GENERAL), *USER NEEDS FACILITIES, FLIGHT, OPERATION, PERSONNEL, STATIONS, TERMINALS, TOWERS,
PERSONNEL MANAGEMENT, INSTRUMENT FLIGHT, INSTRUMENT LANDINGS
- ID (25) Federal Aviation Administration, ATCT(Airport Traffic Control Towers), Approach control facilities, FAA Contractred ATCTs, Total flight services, National Aerospace System
- AB (27) This FAA publication furnishes terminal and en route air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service

Stations, Approach Control Facilities, and FAA-contracted ATCTs. These reports are used as a guide in determining the need for larger or additional facilities, upgraded equipment at particular facilities, and possible increases in personnel at existing facilities.... Airport operations, Instrument operations, Aircraft handled, Instrument approaches, Total flight services

24

AN (1) AD-A268 014/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Criminal Acts Against Civil Aviation. Fiscal Year 1992.

RD (11) 1992

PG (12) 90 Pages

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION

AIRCRAFT HIJACKING, BOMBING, TERRORISM

ID (25) *Criminal acts, FAA(Federal Aviation Administration)

AB (27) Civil aviation overall continued to be the object of numerous criminal acts in 1992, but, in those instances where attacks resulted from factors other than personal motivation, the factors tended to be regional, rather than global, in nature. Accordingly, the geographical distribution of incidents varied widely: from a high of 34 in Europe to a low of 4 in North America. Most criminal acts against civil aviation in Asia were the result of internal ethnic or religious confrontations. These included rocket attacks against airports and aircraft by Afghan guerrillas as well as violence against Air India offices in both Bangladesh and Pakistan by Muslims protesting Hindus' destruction of the mosque in Ayodhya, India. For the first year since 1986, there were no projectile attacks against Narita Airport in Japan, the site of attacks and protests since before its construction even began in 1969. Although contractors and politicians associated with the airport continue to be the targets of leftist radicals, Narita Airport has been eclipsed as an issue by the military, the monarchy, and what the leftists term Japanese economic imperialism. The most significant aviation incident in Asia, the hijacking of a Vietnam Airlines aircraft by a former South Vietnamese Air Force pilot living in the U.S., may not bode well for the future as Vietnamese expatriates attempt to frustrate moves by both U.S. companies and the U.S. government to do business with the regime in Hanoi.

AN (1) AD-A268 328/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT

PLANNING AND PROGRAMMING

TI (6) Annual Report of Accomplishments Under the Airport Improvement Program (11th). Fiscal Year 1992.

DN (9) Annual rept.

RD (11) 1992

PG (12) 128 Pages

RS (14) DOT/FAA/PP-93-2

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRPORTS

AIRPORT CONTROL TOWERS, PAVEMENTS, AIR QUALITY, NOISE, LAND USE

ID (25) *Airport improvement program

AB (27) The Airport and Airway Safety, Capacity, Noise Improvement, and Intermodal Transportation Act of 1992 authorized the extension of AIP at a funding level of \$2.05 billion through FY 1993. This Act included provisions resulting in a number of changes in AIP. The primary changes include the expanded eligibility of items under the Military Airport Program; eligibility for the relocation of air traffic control towers and navigational aids (including radar) if they impede other projects funded under the AIP; the eligibility of land, paving, drainage, aircraft deicing equipment, and structures for centralized aircraft deicing areas; and projects to comply with the Americans with Disabilities Act of 1990, Clean Air Act, and Federal Water Pollution Control Act. The Act also increases from three to seven the number of states which may participate in the State Block Grant Program and extends the program through FY 1996.

AN (1) AD-A273 284/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) General Aviation Activity Survey.

DN (9) Annual summary rept. for 1992

RD (11) 1992

PG (12) 217 Pages

CT (15) DTFA01-93-Y-01021

RN (18) FAA-APO-93-10
XH-XD
RC (20) Unclassified report
DE (23) *GENERAL AVIATION AIRCRAFT, *SURVEYS
AIRCRAFT, AIRFRAMES, CONSUMPTION, ESTIMATES, FLIGHT, FUEL
CONSUMPTION,
LANDING, STATISTICS, UNITED STATES
ID (25) Federal Aviation Administration, *General aviation activities
AB (27) This report presents the results of the annual General Aviation
Activity Survey. The survey is conducted by the FAA to obtain
information on the flight activity of the United States registered
general aviation aircraft fleet. The report contains breakdowns of
active aircraft, annual flight hours, average flight hours and other
statistics by manufacturer/model group, aircraft type, state and region
of based aircraft, and primary use. Also included are fuel consumption,
lifetime airframe hours, engine hours, miles flown estimates, estimates
of the number of landings, IFR hours flown, and grade of fuel consumed
by the general aviation fleet. Aircraft, Aircraft activity, Aircraft
use, Fuel consumption, General aviation, Hours flown, Miles flown.

AN (1) AD-A279 205/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1992.
DN (9) Annual rept.
RD (11) 1992
PG (12) 185 Pages
RS (14) FAA-APO-94-5
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *SCHEDULING, *CARGO HANDLING
AIR TRAFFIC, AIRPORTS, AVIATION ACCIDENTS, GENERAL AVIATION AIRCRAFT,
STATISTICAL DATA, AVIATION SAFETY, CIVIL AVIATION, MANAGEMENT
PLANNING
AND CONTROL, TABLES(DATA), HANDBOOKS
AB (27) This report presents statistical information pertaining to the Federal
Aviation Administration, the National Airspace System, Airports,
Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents,
Aeronautical Production and Imports/Exports, and a Glossary of the
terms used in this publication. Air carrier, Airport, Air traffic,
Airmen, Aircraft Accidents, General aviation, Aeronautical production.

AN (1) AD-A244 128/XAG
FG (2) 170703
**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE**
**TI (6) Air Traffic Control Specialists in the Airway Science Curriculum
Demonstration Project 1984-1990.**
DN (9) Summary rept. no. 3 (Final)
AU (10) Broach, Dana
RD (11) Dec 1991
PG (12) 22 Pages
RS (14) DOT/FAA/AM-91/18
RC (20) Unclassified report
DE (23) AERONAUTICS, AIR TRAFFIC CONTROLLERS, ATTITUDES(PSYCHOLOGY),
ATTRITION,
BENEFITS, CAREERS, DEMONSTRATIONS, EDUCATION, GRADUATES, HUMAN
RELATIONS, INDUSTRIES, JOBS, MANAGEMENT, MINORITIES, ORGANIZATIONS,
PERFORMANCE(HUMAN), RATES, RETENTION(GENERAL), SKILLS,
SUPERVISION,
UNIVERSITIES
ID (25) Airway science, *Air traffic control systems, Training, Program
evaluation
AB (27) The objective of this summative evaluation of the Airway Science
Curriculum Demonstration Project (ASCDP) was to compare the
performance, job attitudes, retention rates, and perceived supervisory
potential of graduates from recognized Airway Science programs with
those of individuals recruited through traditional means in the Air
Traffic Control Specialist (ATCS) occupation. Previous evaluations
conducted by the Higher Education and Advanced Technology Staff (1990)
and the University Aviation Association (1990) described institutional
and organizational benefits that accrued to the agency, participating
institutions, and industry from the Airway Science program. In this
technical evaluation, differences between Airway Science hires (N=312)
and random, stratified sample (N=312) of traditional ATCS hires on
eight program objectives were evaluated: (1) interest in an
aviation-related career; (2) attrition; (3) technical competence; (4)
attitudes toward technological change; (5) managerial potential; (6)
human relations skills; (7) female and minority representation; and (8)
perceptions of the FAA. On one hand, controllers hired from the Airway
Science register expressed significantly more interest in an
aviation-related career (Objective 1) than controllers hired by
traditional means. On the other hand, there were no significant
differences between traditional hires and Airway Science hires on the

remaining criteria. Overall, the performance of Airway Science hires was about the same as that of traditionally hired controllers. These results are consistent with other evaluations (Broach, 1990; Clough, 1988) conducted within the narrow framework defined by the Federal Register announcement of the demonstration project.

AN (1) AD-A244 599/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inhalation Toxicology. 12. Comparison of Toxicity Rankings of Six Polymers by Lethality and by Incapacitation in Rats.

DN (9) Final rept.

AU (10) Sanders, Donald C.

Endecott, Boyd R.

Chaturvedi, Arvind K.

RD (11) Dec 1991

PG (12) 10 Pages

RS (14) DOT/FAA/AM-91/17

RC (20) Unclassified report

DE (23) AIRCRAFT CABINS, ANIMALS, CHLORINATION, COMBUSTION PRODUCTS, ENVIRONMENTS, ESCAPE SYSTEMS, FIRES, FUELS, GASES, INCAPACITATION, INDEXES, INHALATION, LETHALITY, MALES, MATERIALS, MODELS, POLYETHYLENE,

POLYMERS, POLYSTYRENE, PRODUCTION CONTROL, PURITY, PYROLYSIS,

RANK

ORDER STATISTICS, RATS, TOXICITY, TOXICOLOGY

ID (25) *Inhalation toxicology, *Aircraft interior polymers, *Toxicity rankings, Lethality, Time-to-incapacitation, Animal exposure/combustion system, Ranking comparison

AB (27) Polymeric aircraft cabin materials have the potential to produce toxic gases in fires. Lethality (LC50) in animal models is a standard index to rank polymers on the basis of their combustion product toxicity. However, the use of times-to-incapacitation ($t_{sub i s}$) may be more realistic for predicting relative escape times from a fire environment. Therefore, LC50s and $t_{sub i s}$ for six pure polymers of different chemical classes were determined and compared. The polymers were polyamide (I), polystyrene (II), Nylon 6/6 (III), polysulfone (IV), polyethylene (V) and chlorinated polyethylene (VI). In the study, male Sprague-Dawley rats (150-250 g), 12 animals per fuel loading, were exposed to the pyrolysis products from selected weights of each polymer for 30 min in a 265-L combustion exposure system, and LC50s were

determined following a 14-day observation period.

AN (1) AD-A246 694/XAG

FG (2) 140200

010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Validation and Verification Flight Test for TCAS-II Logic Changes (MOPS change 6).

DN (9) Technical note Apr-Jun 89

AU (10) Ciarmella, Kathryn M.

Petri, Michael C.

RD (11) Dec 1991

PG (12) 125 Pages

RS (14) DOT/FAA/CT-TN91/46

RC (20) Unclassified report

DE (23) AIRCRAFT, COLLISION AVOIDANCE, COMPUTERIZED SIMULATION, DISPLAY SYSTEMS, FLIGHT, FLIGHT TESTING, INDUSTRIES, LOGIC, PILOTS, TEST AND EVALUATION, VALIDATION, VERIFICATION

ID (25) TCAS-II, MOPS, *Flight testing, Validation, Verification

AB (27) A series of 24 two aircraft encounters were designed and executed to validate and verify the Change 6 Traffic Alert and Collision Avoidance System (TCAS)-II collision avoidance logic of February 1989. These tests were performed with several aircraft equipped with varying configurations of TCAS and Mode C. Technical Center pilots performed all of the logic test encounters. Technical Center and TCAS manufacturer company pilots performed the TCAS coordination test encounters. Industry pilots performed a pilot evaluation of the logic changes through execution of a subset of the encounters. The logic flight tests demonstrated that the computer simulations of the encounters were accurate. The Change 6 logic successfully resolved all tested encounters, including those which would have resulted in 'advisory invalid' enunciations in the Change 5 logic. The pilots generally accepted maneuvers suggested by TCAS as safe and appropriate for the flight geometries. The pilots did suggest improvements to the TCAS display logic, and many of these improvements were incorporated into the final Change 6 logic of September 1989. The encounters have been updated to include all changes included in the final Change 6 logic in the event that additional flight tests are desired.

AN (1) AD-A266 039/XAG

FG (2) 010600

010309

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airport Activity Statistics of Certified Route Air Carriers: Calendar Year 1991.

DN (9) Rept. for period ending 31 Dec 91.

RD (11) 31 Dec 1991

PG (12) 582 Pages

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: U.S. Gov't. Printing Office, Washington, DC 20402-9328.

PC \$33.00. Microfiche furnished to DTIC and NTIS users.

DE (23) *AIR TRAFFIC

PASSENGERS, BULK CARGO, AIRPORTS, SCHEDULING, COMMERCIAL AVIATION

ID (25) Federal Aviation Administration, T-100 Data collection system, Mail, Air carriers, Certificates of public convenience and necessity, Airliner, Aircraft departures, Aircraft type, Air traffic hubs, Certificated routes

AB (27) There are some major changes in this publication due to the new T-100 data collection system for U.S. air carriers which began January 1, 1990. The format has been changed to comply with the regulations of 14 CFR 141.19.6 that restrict public disclosure of T-100 detail and summary international data. Non U.S. airport data does not appear. Data is no longer broken out by domestic or international operations at airports, only system operations are shown. This edition presents the volume of revenue passenger, freight, and mail traffic handled by the nation's large certificated air carriers at each airport served by these scheduled airlines during the 12 months ending December 31, 1991. In addition, a presentation of aircraft departures is shown including detail by aircraft type for total departures performed in scheduled, nonscheduled, and all services. Large certificated air carriers hold Certificates of Public Convenience and Necessity issued by the Department of Transportation (DOT) authorizing the performance of air transportation. Large certificated air carriers operate aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds. Data for charter only, commuter, intra-state, and foreign-flag air carriers are not included in this publication
24

AN (1) AD-A266 081/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Census U.S. Civil Aircraft Calendar Year 1991.

DN (9) Annual rept.

RD (11) 31 Dec 1991

PG (12) 406 Pages

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: U.S. Gov't. Printing Office, Washington, DC 20402. PC \$23.00. Microfiche furnished to DTIC and NTIS users.

DE (23) *GENERAL AVIATION AIRCRAFT, *INVENTORY, *CENSUS, *CIVIL AVIATION AIRCRAFT, MODELS, POSITION(LOCATION)

ID (25) Federal Aviation Administration, Air carriers, Registered aircraft, Manufacturer

AB (27) This report presents information about the U.S. civil aircraft fleet. It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner. Air carrier, General aviation, Registered aircraft.
24

AN (1) AD-A349 726/XAG

FG (2) 050300

090100

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Cost of Delay Module

DN (9) Technical Note

AU (10) Baart, Douglas

Richie, Joseph M.

Mayv, Kimberly A.

RD (11) Nov 1991

PG (12) 34 Pages

RS (14) DOT/FAA/CT-TN91/52

CT (15) F2006E

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *COST ANALYSIS, *AIR TRAFFIC CONTROL SYSTEMS, *COST MODELS, *MODULES(ELECTRONICS), *DELAY

INVESTMENTS, ECONOMICS, STATISTICS, COST ESTIMATES, COMMERCIAL AVIATION, COSTS, VALUE, AIR TRANSPORTATION

ID (25) NASPAC(NATIONAL AIRSPACE SYSTEM ANALYSIS CAPABILITY)

AB (27) This paper addresses the cost of the delay module that was developed by Federal Aviation Administration Technical Center to be incorporated

into the National Airspace System Analysis Capability (NASPAC) model. This module was developed to address the savings which could be realized when changes are made to the Air Traffic Control (ATC) System. The purpose of this module is to translate delay into a cost metric and, thus, give policy makers a better understanding of potential cost saving measures. These cost saving measures are a direct result of an operational or procedural change to the ATC System. Cost estimates for major air carriers using the National Airspace System (NAS) were derived from Form 41 (operating expenses) data provided by the Office of Airline Statistics. General aviation and military cost estimates were derived from the Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs, FAA-APO-89-10. The cost of the delay module has been tested and is fully operational with the latest release of NASPAC.

AN (1) AD-A242 779/XAG
FG (2) 050900
120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Cross-Level Inferences of Job Satisfaction in the Prediction of Intent to Leave

AU (10) Witt, L. A.
Hellman, Chan M.

RD (11) Oct 1991
PG (12) 10 Pages

RS (14) DOT/FAA/AM-91/15

RC (20) Unclassified report

DE (23) JOB SATISFACTION, MEASUREMENT

ID (25) *Personnel retention, Job satisfaction, Statistical analysis, Federal aviation administration

AB (27) An emerging literature has demonstrated that proportionately more dissatisfied employees intend to leave their employing organization while proportionately more satisfied employees intend to remain. The purpose of the present study was to apply criteria for aggregation of individual-level data to the group-level using a measure of job satisfaction in the prediction of aggregated group-level intent to leave. Data collected from 5,586 employees of the Federal Aviation Administration provided partial support for aggregation. These results have general implications for the use of individual-level job satisfaction scores as predictors of group-level intent to leave.

AN (1) AD-A242 381/XAG

FG (2) 250500
010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Proceedings: The International Satellite Surveillance and Communication Symposium (1st Annual) Held at Atlantic City, New Jersey on September 24-26, 1991

AU (10) Fee, Joseph
Massoglia, Pater

RD (11) Sep 1991

PG (12) 470 Pages

RS (14) DOT/FAA/RD-91/21

RC (20) Unclassified report

DE (23) ADA PROGRAMMING LANGUAGE, AERONAUTICS, AIR TRAFFIC, AIR TRAFFIC CONTROL

SYSTEMS, AIRCRAFT, ARTIFICIAL SATELLITES, AUTOMATIC, COMMERCIAL COMMUNICATIONS, COMMUNICATION AND RADIO SYSTEMS, COMMUNITIES, DATA

LINKS, GROWTH(GENERAL), HIGH FREQUENCY, INDUSTRIES, INTERNATIONAL, INVENTORY, NEW JERSEY, OCEANS, POSITION(LOCATION), RECONNAISSANCE SATELLITES, REPORTS, SATELLITE COMMUNICATIONS, STANDARDS, SURVEILLANCE,

SYMPOSIA, TRAFFIC, USER NEEDS

ID (25) *Satellite communications, *Satellite surveillance, Air traffic service, Symposia

AB (27) Recent technological advancements provide the aviation community with the opportunity to significantly improve the level of air traffic services. Automatic Dependent Surveillance (ADS) in conjunction with Satellite Communication (SATCOM) is the vehicle to accommodate real growth in oceanic traffic while preserving the excellent safety aspects demanded by the aviation user community. To realize these new services, it is necessary to introduce satellite-based communication into the Air Traffic Service (ATS) inventory. Aircraft position reports will be relayed to ground controllers via satellite. Two way data link via satellite will augment and ultimately replace the present HF communications. These two programs, ADS and SATCOM together form the basis for improved oceanic air traffic service. This symposium proceedings provides an overview of international programs and developments related to ADS/SATCOM. Papers provide information on engineering trials, international coordination activities, development of standards and user programs. The symposium proceedings provides papers on current ADS/SATCOM developments by government and industry of participating countries and to project the future activities required

for successful implementation of the ADA/SATCOM programs.

AN (1) AD-A242 891/XAG

FG (2) 201100

010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Program Plan - National Aging Aircraft Research Program.

RD (11) Sep 1991

PG (12) 53 Pages

RS (14) DOT/FAA/CT-88/32-1

RC (20) Unclassified report

NO (21) Revision of Rept. no. DOT/FAA/CT-88/32 dated Aug 89 and May 89.

DE (23) AGING(MATERIALS), AGING(PHYSIOLOGY), AIRCRAFT, AIRWORTHINESS, COMMERCE,

COMMERCIAL AIRCRAFT, COMMERCIAL AVIATION, CONFIDENCE LEVEL, CORROSION,

DAMAGE, DATA BASES, ENGINES, FLEETS(SHIPS), INDUSTRIES, MAINTENANCE, OPERATION, PROBABILITY, REPAIR, SAFETY, UNITED STATES

ID (25) *Aging(Materials), *Aging aircraft, *Fatigue(Mechanics), *Corrosion, *Fracture(Mechanics), Nondestructive inspection, *Flightloads, Maintenance, Repair, Human factors, Failsafe, Safe life, Damage tolerance, link-up

AB (27) The inevitable effects of aircraft aging are progressive increased in the probability of damage from fatigue and corrosion. The continued safe operation of the United States commercial fleet will depend on the ability to anticipate required adjustments in the inspection and maintenance activities to compensate for the aging process. Increasing numbers of aircraft are exceeding their economic design life--the age at which they have historically been retired from major airline service. Presumably, commercial aircraft are designed for infinite life with proper maintenance. But public confidence in operators' abilities to properly maintain older aircraft significantly diminished following the widely publicized failure of the Aloha Airlines 737 fuselage in 1988. The FAA established the National Aging Aircraft Research Program (NAARP) to address this diminished public confidence in the airlines' ability to properly maintain their older aircraft. The goal of the program is to assure continued airworthiness of the United States commercial fleet of in-service and future aircraft beyond their economic design life. This will be achieved through improvements in equipment, techniques, practices, and procedures in aircraft and engine design, repair, maintenance, and inspection. The FAA will identify and direct the research to reach this goal. The results of the program will

include a technical information data base that will be used by the FAA and/or industry to update or develop new rules, standards, advisories, and facilities.

AN (1) AD-A242 892/XAG

FG (2) 250400

250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Satellite Data Link Validation Test Plan.

DN (9) Technical note Dec-Oct 90

AU (10) DiMeo, Hilda M.

RD (11) Sep 1991

PG (12) 19 Pages

RS (14) DOT/FAA/CT-TN91/6

RC (20) Unclassified report

DE (23) AIR TRAFFIC CONTROL SYSTEMS, AIRCRAFT, AVIONICS, COMMUNICATION SATELLITES, EARTH(PLANET), GROUND STATIONS, OCEANS, RADIO LINKS, REPORTS, SATELLITE COMMUNICATIONS, TELEMETERING DATA, VALIDATION, VOICE

COMMUNICATIONS

ID (25) *Satellite communications, *Radio equipment, *Data links, Ground stations, Voice communications

AB (27) This document describes the validation process of a satellite data link which will be conducted by the Federal Aviation Administration (FAA) technical Center. Aircraft equipped with satellite communication avionics will relay progress reports through a satellite to a ground earth station (GES). These will be compared directly to voice reports made using high-frequency (HF) radio. The results of the comparisons between the different links will be used to determine the suitability of satellite communication as a replacement for HF for oceanic air traffic control.

AN (1) AD-B225 673/XAG

FG (2) 010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test Plan for Helicopter Visual Segment Instrument Approach Lighting System (HILS).

DN (9) Technical note

AU (10) Hogan, Suzanne N.

RD (11) Sep 1991
PG (12) 22 Pages
RS (14) DOT/FAA/CT-TN90/61
RN (18) XH-XD
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *APPROACH LIGHTS, *HELIPORTS
TEST AND EVALUATION, VISIBILITY, LIGHTING EQUIPMENT, VISUAL PERCEPTION,
MICROWAVE LANDING SYSTEMS, VISUAL SIGNALS
ID (25) PILOT DATA, HILS(HELIPORT INSTRUMENT LIGHTING SYSTEM), HALS(HELIPORT APPROACH LIGHTING SYSTEM), MLS(MICROWAVE LANDING SYSTEM)
DL (33) 12

AN (1) AD-A240 441/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Selection Criteria for Alcohol Detection Methods

AU (10) McLean, Garnet A.
Wilcox, Bruce C.
Canfield, Dennis V.

RD (11) Aug 1991
PG (12) 14 Pages
RS (14) DOT/FAA/AM-91/12
RC (20) Unclassified report
DE (23) AIRCRAFT INDUSTRY, ALCOHOLISM, ALCOHOLS, AVAILABILITY, DETECTION, INSTRUMENTATION, JOBS, METHODOLOGY, SELECTION, TEST EQUIPMENT
ID (25) *Alcohol, *Breathalyzer

AB (27) The potential need for testing workers in the aviation industry for job-related alcohol abuse requires the development of a testing strategy based, in part, on selection of alcohol test instruments appropriate to the specific goals of the Federal Aviation Administration. The extensive availability of test instruments with varying capabilities and limitations makes selection of alcohol test instruments difficult technologically, with a considerable potential for choosing test instruments of inappropriate character. The considerations outlined herein are intended to assist in the selection process.

AN (1) AD-A241 032/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) The Prevalence of Aphakia in the Civil Airman Population.

DN (9) Final rept.
AU (10) Nakagawara, Van B.
Loochan, Faredoon K.
Wood, Kathryn J.

RD (11) Aug 1991
PG (12) 17 Pages
RS (14) DOT/FAA/AM-91/14
RC (20) Unclassified report
DE (23) AEROMEDICAL EVACUATION, AIR FORCE PERSONNEL, AVIATION PERSONNEL,
CATARACTS, CIVIL AFFAIRS, CLINICAL MEDICINE, CODING, EXTRACTION, FLIGHT, IMPLANTATION, INFLIGHT, LENSES, MEDICINE, MODIFICATION, PATHOLOGY, POPULATION, RECORDS, SURGERY

ID (25) *Vision, Epidemiology, *Aphakia, Lens, Intraocular, Medical certification

AB (27) The Federal Aviation Administration allows civilian airmen with aphakia to fly with waived certificates. This study analyzes the distribution of aphakia in the civil airman population by type (unilateral, bilateral), class of airman medical certificate, and gender for a 4-year period (1982-85). Medical records were evaluated for all certified airmen during the study period who were carrying pathology codes for aphakia and artificial lens implant. The percentage increase in the prevalence of aphakia was higher for bilateral, second-class certificate holders, and male aphakia. The incidence of total and unilateral aphakia declined during the last 2 years of the study period. Aphakia has become increasingly prevalent in the civil airman population. The increased application and modification of surgical procedures for cataract extraction, coupled with possible visual complications from these procedures in flight operations, strongly suggests continued specialized aeromedical certification and clinical research review.

AN (1) AD-A241 296/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Civilian Training in High-Altitude Flight Physiology.

DN (9) Final rept. 1 Jan-31 Mar 91

AU (10) Turner, John W.

Huntley, Stephen, Jr

RD (11) Aug 1991

PG (12) 50 Pages

RS (14) DoT/FAA/AM-91-13

RC (20) Unclassified report

DE (23) ACCIDENTS, AERONAUTICS, AIRFRAMES, COMMERCIAL AVIATION, COURSES(EDUCATION), EDUCATION, FLIGHT, HIGH ALTITUDE, MANUAL OPERATION,

MANUFACTURING, MILITARY TRAINING, PHYSIOLOGY, PILOTS, REGULATIONS, SCHOOLS, TRAINING, UNITED STATES GOVERNMENT, UNIVERSITIES

ID (25) *Physiology, High-altitude, Training, Civilian, Oxygen, hyposia, Decompression

AB (27) A survey was conducted to determine if training in high-altitude physiology should be required for civilian pilots; what the current status of such training was; and, if required, what should be included in an ideal curriculum. The survey included a review of ASRS and NTSB accidents/incidents where high altitude was a contributing factor, current FARs, the Airman's Information Manual, and military training courses. In addition, representatives of pilot and flight attendant unions, airlines, airframe manufacturers, the armed services, NBAA, AOPA, flight schools, and universities were interviewed. And, an expert in the field was identified and asked to write a discussion paper for inclusion in the report. The survey determined that there is a need for such training. It was also found that current training practices are not uniform and sometimes do not even address those subjects required by Federal Aviation Regulations.

AN (1) AD-A249 133/XAG

**FG (2) 250300
150600**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Future FAA Telecommunications Plan.

RD (11) Aug 1991

PG (12) 677 Pages

RC (20) Unclassified report

DE (23) *TELECOMMUNICATIONS, *MILITARY STRATEGY
AIR SPACE, NETWORKS, COSTS

ID (25) Federal aviation administration, NAS(National Air Space), Fuchsia book, Program planning budgeting

AB (27) The FDIO system is a subelement of the En Route Air Traffic Control

Systems element of the NAS communications system. FDIO provides terminal and en route air traffic controllers with direct user input/output of flight plan and flight movement information and updates. FDIO replaces existing Flight Data Entry and Printout (FDEP) and Flight Strip Printer (FSP) systems, and also extends flight data services to terminal locations not presently served by FDEP. The FDIO system concept evolved from the need to increase the reliability and maintainability of the present system. Increases in flight traffic and resultant data loads have caused delays in the processing of data sent to and from FDEP sites, and to FSPs. FDIO will duplicate all of the functions of the FDEP and FSP system while providing extended capabilities. Flight strips will be displayed, as they are in the current system, by printing on the FAA flight strip forms. A CRT capability will be included as a function in all sites. Where no CRT is used, the display for message composition will be an Remote Flight Strip Printers (Terminal) (RFSP(T)). A keyboard will provide for data entry and error display as in the current system. Two central control units will be used at each Central Computer Complex (CCC) and one remote control unit at each FDEP site.

AN (1) AD-A239 907/XAG

FG (2) 050900

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE**

TI (6) Two Studies on Participation in Decision-Making and Equity among FAA personnel

AU (10) Witt, L. A.

Myers, Jennifer G.

RD (11) Jul 1991

PG (12) 16 Pages

RS (14) DOT/FAA/AM-91/10

RC (20) Unclassified report

DE (23) AIR TRAFFIC CONTROLLERS, ATTITUDES(PSYCHOLOGY), DECISION MAKING,

ENVIRONMENTS, HYPOTHESES, JOB SATISFACTION, JOBS, PERCEPTION, PERSONNEL, SCORING, SPECIALISTS, UNCERTAINTY, VARIATIONS

ID (25) *Air traffic controllers, *Job satisfaction, Decision making

AB (27) Moderated multiple regression analyses on data collected from 2,177 FAA air traffic controller specialists indicated that equity perceptions moderated the relationship between participation in decision-making and level of job satisfaction. Specifically, the correlation between participation in decision-making and job satisfaction scores was higher

among subjects high in equity than those low in equity. These results suggest that when individuals perceived their pay, promotional opportunities, and performance ratings as being unfair, participation in decision-making may have had less effect on job satisfaction than when individual perceived them as being fair. In general, the success of managerial efforts to improve job satisfaction by implementing participation in decision-making efforts may be limited when subordinates perceive their personal work situation as unfair. Extending research on the effects of participation in decision-making (PDM) and perceived environmental uncertainty (PEU) on job attitudes, the present study investigated the hypothesis that PDM and PEU scores would account for variance in perceptions of the levels of fairness in personnel decisions. As hypothesized, data collected from 357 Federal Aviation Administration personnel indicated that perceptions of participation in decision-making and environmental uncertainty accounted for unique variance in perceptions of levels of fairness in personnel decisions. Although limited by the possibility of method variance, these data suggest the importance of information in the development of equity perceptions.

AN (1) AD-A239 908/XAG
FG (2) 050900
050400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Exchange Ideology as a Moderator of the Procedural Justice-Satisfaction Relationship.

DN (9) Final rept.

AU (10) Witt, L. A.
Broach, Dana

RD (11) Jul 1991

PG (12) 9 Pages

RS (14) DOT/FAA/AM-91/11

RC (20) Unclassified report

DE (23) EXCHANGE, HYPOTHESES, TESTES, TRAINEES, TRAINING

ID (25) Exchange ideology, *Government employees, Equity, Civilian personnel, Procedural justice, *Public administration

AB (27) The present study of 92 civilian Federal Government employees in a 2-month, full-time training program tested the hypothesis that exchange ideology would moderate the relationship between procedural justice perceptions and satisfaction with the training experience. Exchange ideology refers to the relationship between what the individual

receives and gives in an exchange relationship. At one end of its dispositional continuum, employee effort is based on organization reinforcements--a strong exchange ideology. At the other end of the continuum, employees put forth effort without regard to what they receive from the organization--a weak exchange ideology. The data indicated that perceptions of procedural justice accounted for greater variance in satisfaction among trainees with a strong exchange ideology than among those with a weak exchange ideology. These results suggest that the effect of fairness on satisfaction with a training experience appears to be dependent on the individual's exchange ideology.

AN (1) AD-A241 489/XAG

FG (2) 010200

040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) Terminal Area Forecasts: FY 1991-2005.

RD (11) Jul 1991

PG (12) 544 Pages

RS (14) FAA-APO-91-5

RC (20) Unclassified report

DE (23) AERONAUTICS, AIR TRAFFIC CONTROL SYSTEMS, AIR TRANSPORTATION, AIRCRAFT

INDUSTRY, AIRPORT CONTROL TOWERS, APPROACH, CONTRACTS, FORECASTING,

PLANNING, RADAR, TERMINAL FLIGHT FACILITIES, TOWERS, UNITED STATES

ID (25) *Airport control towers, *Air traffic control terminal areas, *Airport forecasts, Aviation activity, Terminal area forecasts, Enplanements, Aircraft operations, Air carrier, Commuter, Air taxi, General aviation, Military aviation

AB (27) This report contains forecasts of aviation activity of 866 airports in the United States for fiscal years 1991-2005. These include 399 airports with FAA air traffic control towers and radar approach control service and 25 FAA contract towers. For each airport, detailed forecasts are made for the four major users of the air traffic system: air carriers, air taxi/commuters general aviation, and military. Summary tables contain national, FAA regional, and State aviation data and other airport specific highlights. The forecasts have been prepared to meet the budget and planning needs of the FAA and to provide airport-specific information that can be used by State and local aviation authorities, the aviation industry, and the general public.

AN (1) AD-A242 893/XAG
FG (2) 170703
010200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Results of MLS/ILS Comparison Flight Test at YUMA MCAS, Arizona.
DN (9) Technical note for period ending Jun 90
AU (10) Mackin, Clifford W.
RD (11) Jul 1991
PG (12) 21 Pages
RS (14) DOT/FAA/CT-TN91/10
RC (20) Unclassified report
DE (23) ACCURACY, ARIZONA, COMPARISON, FLIGHT, FLIGHT TESTING, INSTRUMENT
LANDINGS, LANDING AIDS, MARINE CORPS, MICROWAVE LANDING SYSTEMS, NAVAL
AIR STATIONS, QUALITY, SIGNALS, STANDARDS, TEST BEDS
ID (25) Flight testing, *Microwave landing systems, *Instrument landing systems, Comparison
AB (27) A series of flight tests were performed by the Federal Aviation Administration (FAA) Technical Center at the Marine Corps Air Station (MCAS) Yuma, Arizona, to obtain Microwave Landing System (MLS) performance data and to compare the performance of a commissioned Category I Instrument Landing System (ILS) with the performance of a prototype MLS. The Technical Center's test bed MLS was transported to and collected with the commissioned Category I ILS on runway 21R at the MCAS Yuma. The flight data collected indicate that while both the ILS and MLS met Category I standards, the MLS represented a noticeable improvement in accuracy, signal quality, and flyability.

AN (1) AD-A240 528/XAG
FG (2) 240100
120500
010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY
TI (6) EDMS - Microcomputer Pollution Model for civilian Airports and Air Force Bases: (User's Guide)
AU (10) Segal, H. M.
RD (11) Jun 1991
PG (12) 53 Pages

RS (14) DOT/FAA/EE-91-3
RN (18) AFESC/ESL-TR-91-31
RC (20) Unclassified report
NO (21) Supersedes Rept. no. DOT/FAA/EE-88-6 dated Aug 88.
DE (23) *AIR POLLUTION, *AIR QUALITY
AIR FORCE, AIR FORCE FACILITIES, AIRCRAFT, AIRPORTS, CIVIL AVIATION, DISPERSING, EMISSION, LANDING FIELDS, MICROCOMPUTERS, MODELS, NUMERICAL
INTEGRATION, NUMERICAL METHODS AND PROCEDURES, POLLUTION, PROTECTION,
REQUIREMENTS, TABLES(DATA), UNITED STATES, USER MANUALS
ID (25) *Air quality, *Computerized simulation, *Airport
AB (27) Before starting an airfield improvement project or changing the numbers, types, or activity of aircraft at an airfield, an air quality assessment is usually required. This assessment is usually made with an emissions/dispersion model. Two emissions/dispersion models were developed in the early 1970s for use at airports and airbases. The United States Air Force (USAF) developed the Air Quality Assessment Model (AQAM) (Rote, et al., 1975), and the Federal Aviation Administration (FAA) developed the Airport Vicinity Air Pollution model (AVAP) (Wang, et al., 1973). However, these models are obsolete--they are expensive to operate, tedious to enter data into, and since they were not approved by the Environmental Protection Agency, had to be sold for each application. Both the FAA and the USAF noticed that microcomputer advances of the 1980s' could significantly improve airfield modeling. They also noticed that the FAA's and the USAF's modeling requirements were quite similar. It was therefore concluded that the FAA and the USAF should join forces to develop a single modeling system that both agencies could use. This single modeling system is called the Emissions and Dispersion Modeling System (EDMS). EDMS is a refined model designed for use on a microcomputer. It employs special table lookup and numerical integration procedures to permit a microcomputer to perform the tasks that had previously been done on a mainframe computer.

AN (1) AD-A242 421/XAG
FG (2) 250500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Controller Evaluation of Initial Data Link En Route Air Traffic Control Services: Mini Study 3.
DN (9) Final rept.
RD (11) Jun 1991

PG (12) 130 Pages
RS (14) DOT/FAA/CT-91/11
RC (20) Unclassified report
DE (23) AIR SPACE, AIR TRAFFIC CONTROL SYSTEMS, CONTROL, DATA LINKS, DELIVERY,
MAN COMPUTER INTERFACE, TEST AND EVALUATION, TEST BEDS
ID (25) *Data links, *Enroute services, Air traffic control services, Link validation
AB (27) This report details the results of Mini Study 3 conducted November 5-9, 1990. This Mini Study was conducted at the Federal Aviation Administration (FAA) Technical Center utilizing the Washington Air Route Traffic Control Center (ARTCC) airspace in the Data Link test bed. Initial Data Link en route services were evaluated in order to identify service delivery methods which optimize the human computer interface. Controllers from the Air Traffic Data Link Validation Team participated in this study.

AN (1) AD-A238 072/XAG

**FG (2) 050900
050800**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE**

TI (6) Some Personality Characteristics of Air Traffic Control Specialist Trainees: Interactions of Personality and Aptitude Test Scores with FAA academy Success and Career Expectations.

DN (9) Final rept.

AU (10) Nye, Lendell G.
Collins, William E.

RD (11) May 1991

PG (12) 15 Pages

RS (14) DOT/FAA/AM-91/8

RC (20) Unclassified report

DE (23) ANXIETY, APTITUDE TESTS, APTITUDES, CONTROL, INTERACTIONS, JOB SATISFACTION, LOW LEVEL, MULTIPLEXING, NAVAL PERSONNEL, PERSONALITY,

PERSONNEL, PROFILES, RATINGS, RECRUITS, SCALE, SCORING, SELECTION, STABILITY, STUDENTS, TEST AND EVALUATION, TRAINEES, WOMEN

ID (25) STPI(State Trait Personality Inventory), MCAT(Multiplex Controller Aptitude Test), *Air traffic controllers, Training, *Psychological tests

AB (27) The State-Trait Personality Inventory (STPI) is a self-report inventory which measures anxiety, curiosity, and anger. The three 'trait' scale

scores are determined by the frequency of each emotion as stable personality constructs. The Multiplex Controller Aptitude Test (MCAT) is the primary selection test completed by ATCS applicants. The STPI was given to 1,284 students who entered the FAA Academy nonradar screen program between October 1986 and September 1987. Men and women ATCS trainees exhibited less anxiety and anger than normative groups of college students and Navy recruits. Also, in most comparisons, the ATCS sample indicated greater curiosity. ATCS pass rates were reduced within each MCAT score level for the groups of entrants with anxiety or anger scores above the normative levels. Personality trait profiles differed significantly for groups when they were categorized by both self-expected job performance levels and job satisfaction, but not aptitude score levels. Analyses indicated significant relationships between anxiety and lower job performance self-expectations and between curiosity and higher self-expected job satisfaction. FAA Academy entrants have a group profile indicating relatively low levels of trait anxiety and anger. Personality factors can impact (a) the predictive validity of the MCAT in determining a student's aptitude for learning air traffic control principles/procedures and (b) potentially, organizational goals such as increasing employee job satisfaction.

AN (1) AD-A238 267/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE**

TI (6) Selection of Air Traffic Controllers: Complexity, Requirements, and Public Interest.

DN (9) Final rept.

AU (10) Wing, Hilda
Manning, Carol A.

RD (11) May 1991

PG (12) 43 Pages

RS (14) DOT/FAA/AM-91/9

RN (18) XF-FAA

RC (20) Unclassified report

DE (23) ACCESS, AIR TRAFFIC, AIR TRAFFIC CONTROL SYSTEMS, AIR TRAFFIC CONTROLLERS, CAREERS, HANDS, JOBS, LIMITATIONS, MILITARY

FORCES(UNITED STATES), NATIONS, PSYCHOLOGY, SELECTION, SYMPOSIA, UNITED STATES GOVERNMENT, UNIVERSITIES, VISIBILITY

AB (27) The essays in this technical report represent presentations made as part of a symposium entitled Selection of Air Traffic Controllers:

Complexity, Requirements, and Public Interest. The symposium was presented at the 98th Annual convention of the American Psychological Association, August 10-14, 1990, in Boston, MA. The presentations address the diverse process of valid selection for a highly demanding occupation in the career Federal civil service: the air traffic control specialist. Although the military services and a growing number of colleges and universities provide training in air traffic control, the Federal Aviation Administration has up to now maintained fairly strict and restricted access to most of the required selection and training for this highly visible job whose occupants are perceived to hold the nation's air traffic and safety in their hands. Each of the accompanying reports discusses a different component of the selection process for air traffic controllers.

AN (1) AD-A242 422/XAG

FG (2) 250500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aeronautical Mobile Satellite Service (AMSS) Test Plan.

DN (9) Technical note

AU (10) Sandlin, Sean M.

RD (11) May 1991

PG (12) 49 Pages

RS (14) DOT/FAA/CT-TN91/20

RC (20) Unclassified report

DE (23) AERONAUTICS, ARTIFICIAL SATELLITES, COMMUNICATIONS CENTRALS, MOBILE,

PLANNING, STANDARDS, TEST AND EVALUATION, TEST FACILITIES, VALIDATION

ID (25) *Satellite communications, Mobile services, Practices, Standardization

AB (27) This plan describes a test program which will be conducted by the Federal Aviation Administration (FAA) to support the validation of Standards and Recommended Practices (SARPs) being developed for the Aeronautical Mobile Satellite Service (AMSS) by the International Civil Aviation Organization (ICAO). It also contains a description of the Communications Test Facility (CTF) which will be used to perform the tests. An appendix includes a brief description of each test to be performed along with setup and data to be recorded.

AN (1) AD-A236 107/XAG

FG (2) 050900

010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Individual Differences Underlying Pilot Cockpit Error.

DN (9) Doctoral thesis

AU (10) Edens, Eleana S.

RD (11) Apr 1991

PG (12) 232 Pages

RS (14) DOT/FAA/RD-91-13

RC (20) Unclassified report

DE (23) ACCIDENTS, AIRCRAFT, ARMY PERSONNEL, AUTOMATION, AVIATION ACCIDENTS,

AWARENESS, COCKPITS, COGNITION, ERRORS, HYPOTHESES, PERFORMANCE(HUMAN),

PERSONALITY, PILOTS, RATES, STRESSES, STRESS(PSYCHOLOGY), STUDENTS,

VARIABLES

ID (25) *Pilots, *Judgement(Psychology), *Performance(Human), *Aviation safety, *Stress(Psychology)

AB (27) Pilot error is cited as the cause of over 80 percent of aviation accidents. As technology renders aircraft more mechanically reliable and provides advanced automation in the cockpit, the rate of human error caused accidents remains stable. This troubling aspect of modern aviation necessitates initiatives to remedy the situation. The present study investigated the relationships between individual difference variables and pilot cockpit error in an attempt to understand the factors that may contribute to accidents caused by human error. It was expected that personality characteristics, individual attitudes, and cognitive ability would affect pilot situational awareness, pilot psychological stress levels, and pilot hazardous thought patterns, which would subsequently affect pilot error type and frequency. Three hundred Army student helicopter pilots were rated on errors during two evaluation check rides. Results indicate inconsistent support for these hypotheses. Situational awareness and psychological stress levels are related to pilot error; however, individual differences that impact the development of situational awareness or that contribute to pilot stress level remain in question.

AN (1) AD-A236 695/XAG

FG (2) 120300

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Job Task-Competency Linkages for FAA First-Level Supervisors

AU (10) Myers, Jennifer G.
Stutzman, Thomas M.
RD (11) Apr 1991
PG (12) 46 Pages
RS (14) DOT/FAA/AM-91/5
RN (18) XD-DOT/FAA/AM
RC (20) Unclassified report
DE (23) AIR TRAFFIC, AIRCRAFT, COMPARISON, DEMOGRAPHY, FLIGHT, JOBS,
MULTIVARIATE ANALYSIS, ORGANIZATIONS, POPULATION,
POSITION(LOCATION),
POSTAL SERVICE, RELIABILITY, STANDARDS, SUPERVISORS, SURVEYS,
TRAINING,
VARIATIONS
ID (25) Surveys, Federal aviation administration, Supervisors, Job analysis,
Competencies, Statistical analysis
AB (27) A study was conducted to determine the linkages between the job tasks
and competencies of first level supervisors in the FAA. A sample was
drawn from each of nine job groups: Flight Service, Terminal, En Route,
Regional Office/Headquarters Air Traffic, Aircraft Certification,
Security, Airway Facilities, Flight Standards, and Other) for a total
sample of 2,412 first-level supervisors. Mail surveys were distributed
in April, 1990. Respondents were asked to (1) rate the relative
importance of each of 50 tasks, (2) rate the relative time spent on
each task, (3) identify up to three competencies needed to successfully
perform each task, and (4) provide organizational location and
demographic information. A total of 1020 surveys were returned for a
response rate of 42%. After eliminating unuseable and unreliable
respondents, the total sample for analysis was 853. Comparison of
population and respondent demographics indicated that the results were
representative and thus generalizable to the agency population of
first-level supervisors. Statistically significant differences were
found between job groups on the Time Spent, Importance, and
Competencies variables using multivariate and univariate analysis of
variance. Considering statistical and practical significance of the
results, it was concluded that the task make-up of the job varies among
the job groups but that the competencies required for the different
jobs are quite similar. Applications of the results to selection,
performance assessment, and training/development were discussed and
recommendations for program changes were provided.

AN (1) AD-A237 120/XAG
FG (2) 230600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Donning Times and Flotation Characteristics of Infant Life Preservers:
Four Representative Types.

DN (9) Final rept.
AU (10) Funkhouser, Gordon E.
Fairlie, Gregory W.
RD (11) Apr 1991
PG (12) 12 Pages
RS (14) DOT/FAA/AM-91/6
RC (20) Unclassified report
DE (23) ATTITUDE(INCLINATION), BUOYANCY, CHAMBERS, FLOTATION, HEAT,
INFANTS,
INFLATABLE STRUCTURES, LIFE PRESERVERS, PROTECTION, SAFETY, WATER
ID (25) *Life preservers, *Infants, Flotation devices, Donning times, Flotation
characteristics
AB (27) Four currently available representative types of infant life preservers
were tested to assess the donning times and flotation characteristics
for infant subjects (6 months to 2 years old). Two of the four devices
tested were fixed-foam recreational devices and two were inflatable,
dual-chambered devices that met TSO C-13d requirements. The parent
received video-taped donning instructions prior to the timed donning
trials. Donning times were recorded from the time the unwrapped device
was handed to the parent until the last connection or adjustment was
made. The device that was most quickly donned was an inflatable type
with a vest attached to the top of the upper chamber (median donning
time was 28.8 seconds). This infant life preserver also exhibited good
body support with the head well above the water. The two fixed-foam
devices were designed to have approximately one-third of the buoyancy
of the two inflatable types and relied on assistance from an adult to
maintain the infant in a safe flotation attitude. It appears that the
fixed-foam infant life preservers would provide more thermal protection
than the inflatable life preservers.

AN (1) AD-A237 126/XAG
FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Flight Service Specialist Initial Qualifications Course: Content
Validation of FAA Academy Course 50232

AU (10) Broach, Dana

RD (11) Apr 1991
PG (12) 20 Pages
RS (14) DOT/FAA/AM-91/4
RC (20) Unclassified report
DE (23) AUTOMATION, CONTROL, FACILITIES, FIELD CONDITIONS, FLIGHT, FUNCTIONS,
INDEXES, INSTRUMENTATION, JOB ANALYSIS, LABORATORY PROCEDURES, PROBABILITY, SIMULATION, SPECIALISTS, SPECIFICATIONS, STATIONS, STUDENTS, TRAINING, VALIDATION
ID (25) *Air traffic controllers, *Air traffic control systems, Selection, Validity, Training, Flight service specialist
AB (27) This study evaluates the content validity of the Initial Qualifications Course provided to flight service specialists (FSS) by the FAA Academy. The purpose of FSS Initial Qualifications Course (FAA Academy course 50232) is to predict the student's probability of attaining certification as a full performance level controller in field facilities. First, results of analyses of the FSS position in automated flight service stations (AFSSs) are reviewed and summarized. Second, the linkage between job analysis and specifications of training content are described. Third, a content validation study, using a panel of 16 full performance level specialists from field facilities, is described. The panel reviewed the graded, multiple-choice written examinations and a sample of graded laboratory simulations against the available job function descriptions and identified knowledges and skills required to perform those functions. The panel indicated whether a knowledge or skill was represented or tested in the reviewed graded instrument. The proportion of knowledges or skills represented by an instrument was then calculated for each rater; the average of these proportions across raters provided an overall index of the degree to which the knowledges and skills were represented in the graded instruments. A criterion of 70% coverage was selected as the evaluative benchmark.

AN (1) AD-A237 308/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) MLS Mathematical Model Validation Study Using Airborne MLS Data from Atlantic City International Airport Boeing 727 Elevation Shadowing Flight Tests.
DN (9) Technical note Dec 88-Dec 90
AU (10) Jones, Jesse D.
RD (11) Apr 1991
PG (12) 49 Pages

RS (14) DOT/FAA/CT-TN90/55
RC (20) Unclassified report
DE (23) ERRORS, FLIGHT PATHS, MATHEMATICAL MODELS, MICROWAVE LANDING SYSTEMS,
MODELS, SIMULATION, VALIDATION
ID (25) *Microwave landing systems, *Mathematical models, *Flight testing, Data acquisition
AB (27) This study evaluated the performance of the Microwave Landing System (MLS) math model by comparing the results of the model's simulation errors along a flightpath with actual flight check measurements. The data collected for this study were designed specifically to evaluate the shadowing aircraft computations of the model. The results showed that there was some agreement between measured and modeled data, but it was concluded that further development of the shadowing aircraft computations is required.

AN (1) AD-A239 443/XAG
FG (2) 170703
010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) New York Area Control Facility/Metroplex Control Facility Vulnerability Analysis.
DN (9) Technical note Oct-Feb 91
AU (10) Adkins, Alfred L.
Pomerantz, Arthur P.
RD (11) Apr 1991
PG (12) 43 Pages
RS (14) DOT/FAA/CT-TN91/21
RC (20) Unclassified report
DE (23) CONTROL CENTERS, EAST(DIRECTION), MODELS, NEW YORK, REGIONS, SIMULATION, VULNERABILITY
ID (25) *Air traffic control systems, New York(New York), New York, New Jersey, Pennsylvania, Connecticut, Illinois, *Backup systems, Failure, *Air control centers, Metroplex control facilities, Delay, Air traffic control terminals areas, Airport radar systems, Ground controlled approach radar, Air space, NASPAC Computer program, Computerized simulation, Scenarios
AB (27) This report contains the results of an analysis of the impact of a New York Area Control Facility (ACF) or Metroplex Control Facility (MCF) failure under three different MCF configurations. This analysis was conducted using the National Airspace System Performance Analysis Capability (NASPAC) simulation model to assist ATR-310 and the Eastern

Region on defining end-state configurations for the New York ACF/MCF. This report includes a discussion of the facilities and procedures involved in an ACF/MCF failure, the analysis approach, and the results of the analysis.

AN (1) AD-A240 284/XAG

FG (2) 250500
200600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Glossary of Optical Communication Terms.

DN (9) Technical note

AU (10) Beaty, James S.

RD (11) Apr 1991

PG (12) 48 Pages

RS (14) DOT/FAA/CT-TN91/9

RC (20) Unclassified report

DE (23) BACKGROUND, COMMUNICATION AND RADIO SYSTEMS, DICTIONARIES, FIELD

EQUIPMENT, GOVERNMENT PROCUREMENT, OPTICAL COMMUNICATIONS, TELECOMMUNICATIONS, VOCABULARY

ID (25) *Optical communications, *Glossaries, Technical terms, Fiber optics

AB (27) This glossary contains definitions of technical terms commonly used in the field of optical communication. It is intended for those who already have a technical background (engineers, scientists, and technicians), but are not familiar with the terminology of optical communication. Readers should note that for purposes of federal procurement, official definitions of terms related to telecommunication, of which optical communication is a subset, may be found in Federal Standard 1037A, Glossary of Telecommunication Terms. (A revision, FS-1037B, is in preparation.) The present document contains a number of entries not found in FS-1037B, and although not legally an arbiter of the official definitions found there, serves in many cases to amplify and/or clarify those definitions. Also, among the notes accompanying the definitions herein are a number of 'mini-tutorials' that address certain matters which experience has shown to have led to confusion on the part of some individuals involved in one or more aspects of optical communication.

AN (1) AD-A234 784/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Utilization of Emergency Medical Kits by Air Carriers

AU (10) Hordinsky, J. R.

George, M. H.

RD (11) Mar 1991

PG (12) 7 Pages

RS (14) DOT/FAA/AM-91/2

RN (18) XF-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *MEDICAL EQUIPMENT

COMMERCIAL AIRCRAFT, FIRST AID, MEDICAL SUPPLIES

ID (25) Medical kits, Emergency medical care, Inflight health care, Airlines, Department of Transportation

AB (27) The Department of Transportation Emergency Medical Equipment Requirements Rule of January 9, 1986, mandated a period of 24 months (August 1986-July 1988) during which all air carriers flying under Federal Aviation Regulation, Part 121, would monitor medical emergencies and use of the prescribed medical kits. The reporting airlines were to provide descriptions of how the medical kits were used, by whom, and the outcome of the medical emergency. During the two year monitoring period, a total of 2,322 reports of medical emergencies were documented; these included 33 inflight deaths, with only one of these representing a crew member (secondary to aircraft structural failure and resultant physical trauma). In the 2,293 actual uses of the medical kit, a physician was the provider in over 85% of the cases. The most common presenting symptom was pain, with unconsciousness, impaired breathing, nausea and/or vomiting, and various myocardial diagnoses the most common presenting sign (in descending order of frequency). High frequency recurrent complaints about kit adequacy were not noted during the two year monitoring period; there were scattered references about the poor technical quality of the most frequently employed equipment; the medical kit content might selectively be expanded to include analgesics, antiarrhythmics, antiemetics, and bronchodilators.

AN (1) AD-A235 526/XAG

FG (2) 060500
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Response Capability during Civil Air Carrier Inflight Medical Emergencies

AU (10) Hordinsky, J. R.
George, M. H.

RD (11) Mar 1991

PG (12) 10 Pages

RS (14) DOT/FAA/AM-91/3

RC (20) Unclassified report

DE (23) AERONAUTICS, AIRCRAFT, COMMERCIAL AVIATION, EMERGENCIES, INFLIGHT,

KITS, MEDICINE, PAIN, PASSENGERS, PHYSICIANS, REPORTS, RESPONSE, STETHOSCOPES, THORAX, UNITED STATES GOVERNMENT

ID (25) Aviation medicine, Civil aviation, Emergencies, First aid, Medical kits, Inflight health care, Air lines

AB (27) Expanded civil aircraft medical emergency kits have been mandated on U.S. carriers since August 1986. Airlines provided the Federal Aviation Agency reports on medical kit usage and outcomes of the associated medical emergencies; 1,016 inflight medical events during the period August 1, 1986, through July 31, 1987, were available for review.

Physicians responded to the emergencies in over 63: of the occurrences; the two most prevalent presenting situation were chest pain and syncopal episodes. Nine passengers died on board aircraft, and at least three deaths occurred post-landing. A minimum of 89 of the total cases resulted in flight diversions. The sphygmomanometer (739 cases) and stethoscope (734. cases) were the most frequently used kit items; oropharyngeal airways were utilized in 14 cases. Since standardized reporting formats are not required, evaluation of response capability remains incomplete. Although an additional year of medical emergency kit usage remains to be reported, mandatory reporting of use to the FAA has not been required since July 1988.

AN (1) AD-A241 439/XAG

FG (2) 230600

061200

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Utilization of Emergency Kits by Air Carriers

AU (10) Hordinsky, J. R.
George, M. H.

RD (11) Mar 1991

PG (12) 6 Pages

RS (14) DOT/FAA/AM-91/2

RC (20) Unclassified report

DE (23) AERONAUTICS, AIR TRANSPORTATION, AIRFRAMES, ANALGESICS, ANTISPASMODIC

AGENTS, BLACKOUT(PHYSIOLOGY), COMMERCIAL AVIATION, CONTROL, CREWS,

EMERGENCIES, FAILURE(MECHANICS), FLIGHT, FREQUENCY, HIGH FREQUENCY,

KITS, MEDICAL SUPPLIES, MEDICINE, NAUSEA, PAIN, PHYSICAL PROPERTIES, PHYSICIANS, QUALITY, STRUCTURAL PROPERTIES, TRAUMA, UNITED STATES GOVERNMENT

ID (25) *Emergencies, *Medical supplies, First aid, Commercial aviation, Medical kits, Emergency medical care, Air lines

AB (27) The Department of Transportation Emergency Medical Equipment Requirements Rule of January 9, 1986, mandated a period of 24 months (August 1986-July 1988) during which all air carriers flying under Federal Aviation regulation, Part 121, would monitor medical emergencies and use of the prescribed medical kits. The reporting airlines were to provide descriptions of how the medical kits were used, by whom, and the outcome of the medical emergency. During the two year monitoring period, a total of 2,322 reports of medical emergencies were documented; these included 33 inflight deaths, with only one of these representing a crew member (secondary to aircraft structural failure and resultant physical trauma). In the 2,293 actual uses of the medical kit, a physician was the provider in over 85% of the cases. The most common presenting symptom was pain, with unconsciousness, impaired breathing, nausea and/or vomiting, and various myocardial diagnoses the most common presenting sign (in descending order of frequency). High frequency recurrent complaints about kit adequacy were not noted during the two year monitoring period; there were scattered references about the poor technical quality of the most frequently employed equipment; the medical kit content might selectively be expanded to include analgesics, anti-arrhythmics, antiemetics, and bronchodilators.

AN (1) AD-A248 011/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR

FOR NAS DEVELOPMENT

TI (6) Evaluation of Advanced Microwave Landing System Procedures in the New York Terminal Area.

DN (9) Final rept.

AU (10) Scott, Barry C.
Dargue, Jim
Goka, Tsuyoshi
Avionics, T. G.
RD (11) Mar 1991
PG (12) 122 Pages
RS (14) DOT/FAA/ND-91/1
RC (20) Unclassified report
DE (23) AIRPORTS, BENEFITS, CONGRESS, ECONOMICS, INDUSTRIES, MICROWAVE LANDING SYSTEMS, NEW YORK, SIMULATION, TERMINAL FLIGHT FACILITIES
AB (27) In 1988, the Federal Aviation Administration (FAA) established the Microwave Landing System (MLS) Program Office and initiated a series of projects designed to demonstrate the operational, environmental and economic benefits of the MLS. These projects are scheduled to be completed by the end of 1991. The results of all these efforts will provide the FAA, Congress and industry with the data necessary to evaluate the future role of the MLS in the National Airspace System (NAS). The results of the first simulation conducted under the project titled 'Evaluation of Complex MLS procedures in Multi-Airport Environments' are presented in this report. This initial experiment involved LaGuardia (LGA), John F. Kennedy (JFK), and Newark (EWR) airports in the New York Terminal Control Area.

AN (1) AD-A248 076/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
POLICY AND P LANS
TI (6) First Annual FAA General Aviation Forecast Conference Proceedings (1st) Held in Denver, Colorado.
RD (11) Mar 1991
PG (12) 163 Pages
RS (14) FAA-APO-91-3
RC (20) Unclassified report
DE (23) *COMMERCIAL AVIATION, *SYMPOSIA, *FORECASTING AIR TRAFFIC CONTROLLERS, AIR TRAFFIC, FINANCE
ID (25) *Federal Aviation Administration

AN (1) AD-A231 721/XAG
FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
POLICY AND P LANS
TI (6) FAA Aviation Forecasts: Fiscal Years 1991-2002.
RD (11) Feb 1991
PG (12) 281 Pages
RS (14) FAA-APO-91-1
RC (20) Unclassified report
DE (23) AERONAUTICS, AIR TRANSPORTATION, AIRCRAFT INDUSTRY, AIRPORTS, CONTROL, COSTS, DOMESTIC, ECONOMICS, FLIGHT, FORECASTING, FUELS, GROWTH(GENERAL), INFLIGHT, OILS, PLANNING, REVENUE SHARING, STATIONS, TOWERS
ID (25) *Forecasting, *Air control centers, Air carrier, Aviation statistics, Air taxi, Aviation activity forecasts, Commuters, Federal aviation administration, General aviation, Military aviation
AB (27) This report contains the Fiscal Years 1991-2002 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the major users of the National Aviation System: air carriers, air taxi-commuters, non-military and general aviation. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. After a downturn in economic growth in 1991, caused largely by an escalation in oil prices, the overall outlook for the 12-year forecast period is for continued economic growth, declining real fuel prices, and moderate inflation. Based upon these assumptions, aviation activity by fiscal year 2002 is forecast to increase by 27.4 percent at towered airports, 30.1 percent at air route traffic control centers, and 6.5 percent in flight services performed. Hours flown by general aviation are forecast to increase 17.5 percent and domestic revenue passenger miles (RPM's) are forecast to increase 62.6 percent, with scheduled international RPM's forecast to increase by 110.8 percent and regionals/commuters RPM's forecast to increase by 140.4 percent.
AN (1) AD-A232 671/XAG
FG (2) 010500
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Precision Runway Monitor Demonstration Report.

DN (9) Final rept.

RD (11) Feb 1991

PG (12) 133 Pages

RS (14) DOT/FAA/RD-91/5

RC (20) Unclassified report

DE (23) AIRPORTS, ANTENNAS, CAPACITY(QUANTITY), COLORS, DEMONSTRATIONS, DISPLAY

SYSTEMS, FLIGHT TESTING, HIGH RESOLUTION, LANDING, MONITORS, PARALLEL

ORIENTATION, PRECISION, RADAR, RECOGNITION, ROTATING ANTENNAS, RUNWAYS,

SCANNING, SEPARATION

ID (25) *Instrument landings, Precision runway monitor, Closely spaced parallel runways, Airport, Demonstration tests, Risk model

AB (27) This report is prepared as the result of a development and demonstration project to increase landing capacity on closely spaced parallel runways. The project developed new equipment and procedures, and demonstrated them in a variety of ways at two different airports. The new monitoring equipment consists of radars and displays. The systems installed at Raleigh, N.C. included an electronically scanned antenna capable of half-second update intervals, while the Memphis, TN installation provided a mechanically rotating 'back-to-back' antenna with a 2.4-second update interval. In addition, both sites provided enhanced high-resolution color ATC display systems. The purpose of the report is to present findings relevant to a decision concerning whether or not the current standard for runway separation of 4,300 ft can be reduced to 3,400 ft when the precision runway monitor equipment is utilized. The 3,400-ft separation was the spacing demonstrated most often in both simulations and flight tests. The demonstration produced a broad recognition that both system could be used to monitor parallel runways spaced at 3400 foot apart.

AN (1) AD-A236 031/XAG

FG (2) 010300

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Development and Growth of Inaccessible Aircraft Fires under Inflight Airflow Conditions.

DN (9) Final rept.

AU (10) Blake, David

RD (11) Feb 1991

PG (12) 34 Pages

RS (14) DOT/FAA/CT-91/2

RC (20) Unclassified report

DE (23) AIR FLOW, AIRCRAFT, AIRCRAFT CABINS, AIRCRAFT FIRES, BLANKETS, CEILING,

COMBUSTION, CONTAMINATION, CONTROL, CREWS, FIRES, FLOORS, INFLIGHT, INSULATION, SMOKE, SOLID WASTES

ID (25) *Aircraft fires, *Air flow, *Inflight

AB (27) The purpose of this project was to determine the likelihood of fire development and growth in accessible areas of an aircraft and the resulting hazards to cabin occupants from these fires. Numerous inflight fires or smoke events occur in accessible areas but are controlled by the crew or self-extinguish. Fatal inflight fires are rare events but originate in inaccessible areas. This project consisted of 57 tests of hidden inflight fires in a section of a DC-10 test article. The fires were started behind sidewall panels, below the cabin floor, above the cabin ceiling, in overhead storage bins, in lavatory trash receptacles, and adjacent to lavatory flush motors. The conclusions were that (1) although uncontaminated insulation blankets did not readily support combustion, contaminated insulation blankets were found to support combustion, contaminated insulation blankets were found to support combustion (consistent with service experience); and (2) in this project and also consistent with actual service experience, the built-in Halon 1301 trash receptacle extinguishers did not always completely extinguish trash fires.

AN (1) AD-A237 117/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) FAA Aviation Forecast Conference Proceedings (16th).

RD (11) Feb 1991

PG (12) 241 Pages

RS (14) FAA-APO-91-2

RC (20) Unclassified report

DE (23) ACCUMULATION, AERONAUTICS, AIRPORTS, BANKRUPTCY, CIVIL AVIATION, COMMERCIAL AVIATION, COSTS, FINANCE, FORECASTING, FUELS, INDUSTRIES,

IRAQ, LOSSES, PASSENGER AIRCRAFT, SOUTHWEST ASIA, SYMPOSIA

ID (25) *Transport aircraft, *Airlift operations, *Civil aviation, *Commercial aircraft, Air traffic control systems, Forecasts

AB (27) On August 2, 1990, Iraq invaded Kuwait. With the resultant U.S. military build-up, the Civil Reserve Air Fleet (CRAF) program activated approximately 50 U.S. air carrier aircraft on August 17 for the first time since the program was instituted in fuel doubles, from fifty-five cents in July to one dollar and eleven cents in October. The U.S. airlines were unable to increase their operating revenues to match the unanticipated jump in operating expenses. As a result, many airlines found themselves in financial difficulty. Continental Air Lines filed for bankruptcy on December 3rd, with Pan American filing on January 8th. (In fact, ATA estimates an industry loss of over \$2 billion in calendar 1990.) Depending on the length and severity of the current crisis, the much discussed, steady consolidation of the industry could be accelerated.

AN (1) AD-A233 167/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Effect of Simulated Altitude on the Visual Fields of Glaucoma Patients and the Elderly

AU (10) Nakagawara, Van B.

Fulk, George W.

West, Roger W.

RD (11) Jan 1991

PG (12) 22 Pages

RS (14) DOT/FAA/AM-91/1

RC (20) Unclassified report

DE (23) AGING(PHYSIOLOGY), AIRCRAFT, ALTITUDE, ANALYSIS OF VARIANCE, CIVIL AVIATION, DEFECTS(MATERIALS), GLAUCOMA, GROUND LEVEL, HUMANS, HYPOXIA,

PASSENGERS, PATIENTS, SEQUENCES, SIMULATION, TEST AND EVALUATION, VISION, VISUAL DEFECTS

ID (25) *Vision, *Glaucoma, Visual fields, Certification, Hypoxia

AB (27) This study tests whether mild hypoxia, that is typically encountered in civilian aircraft, causes temporary visual field defects in elderly persons or temporarily increases pre-existing defects in persons with glaucoma. The central 24-2 program on the Humphrey automated perimeter was used to test visual fields in three groups of subjects: six with glaucoma, 12 age matched controls all of whom were over 44 years of age, and six normal subjects under age 36. Visual fields were tested at

ground level and at 10,000 feet in an alternating sequence. A repeated measures design of multiple analysis of variance was used to analyze the data. Altitude was found to have no effect on the visual fields of subjects with glaucoma, age-matched normals, and younger subjects. We found no evidence to suggest a change in the present Federal Aviation Administration standards, which allow a special issuance certificate to persons with glaucoma who wish to obtain medical clearance to operate civilian aircraft. Nor have we found any evidence that should discourage glaucoma patients from flying as passengers.

AN (1) AD-A233 692/XAG

FG (2) 250500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Controller Evaluation of Initial Data Link Terminal Air Traffic Control Services.

DN (9) Final rept.

RD (11) Jan 1991

PG (12) 68 Pages

RS (14) DOT/FAA/CT-90/29

RC (20) Unclassified report

DE (23) ACCEPTABILITY, CONTROL, DATA LINKS, DATA PROCESSING, DELIVERY, MULTIPLEXING, TEST AND EVALUATION, WORKLOAD

ID (25) *Data links, *Air traffic control systems, Mode of operation, Terminals

AB (27) This document details the results of the first Federal Aviation Administration Technical Center investigation of the initial terminal air traffic control services developed for transmission using Data Link technology. Initial Data Link services were evaluated in order to identify service delivery methods which optimize controller acceptance, performance, and workload.

AN (1) AD-A253 046/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Accomplishments under the Airport Improvement Program: Fiscal Year 1991.

DN (9) Annual rept. no. 10

AU (10) Hetsko, Jean

RD (11) 1991

PG (12) 124 Pages

RS (14) DOT/FAA/RP-92-3

RC (20) Unclassified report
DE (23) *AIRPORTS, *GRANTS, *BUDGETS
CONGRESS, TRANSPORTATION, TERMINAL FLIGHT FACILITIES, AVIATION
SAFETY
ID (25) *FAAP(Federal Aid Airport Program), Airway, Trust funds
AB (27) Section 521 of the Airport and Airway Improvement Act of 1982 (Public
Law 97-248) requires that the Secretary of Transportation submit an
annual report to Congress describing the accomplishments of the Airport
grant program. This report covers activities for the fiscal year ending
September 30, 1991. Report of Accomplishments, Airport Improvement
Program.

AN (1) AD-A258 760/XAG

FG (2) 010309

010600

150607

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL
AVIATION**

SECURITY

TI (6) Criminal Acts Against Civil Aviation.

RD (11) 1991

PG (12) 90 Pages

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *CIVIL AVIATION

TERRORISM, CRIMINOLOGY

ID (25) Hijacking, Bombings, Criminal activity

AB (27) Criminal Acts Against Civil Aviation is a compilation of hijackings,
bombings, and other significant criminal acts against civil and general
aviation interests worldwide.

AN (1) AD-A266 030/XAG

FG (2) 010300

010309

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) FAA Statistical Handbook of Aviation: Calendar Year 1991.

DN (9) Annual rept.

RD (11) 1991

PG (12) 184 Pages

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Availability: Supt. of Docs, GPO, Washington, DC 20402-9328, PC\$9.50.
Microfiche furnished to DTIC and NTIS users.

DE (23) *AIR TRAFFIC, *TABLES(DATA)

ACCIDENTS, AIRCRAFT, AIRPORTS, AVIATION ACCIDENTS, DICTIONARIES,
DOCUMENTS, EXPORTS, GENERAL AVIATION AIRCRAFT, IMPORTS,

MANAGEMENT,

PRODUCTION, TRAFFIC, STATISTICS, STATISTICAL ANALYSIS

ID (25) Federal Aviation Administration, Air carrier, Airmen, Aircraft
accidents, General aviation, Aeronautical production

AB (27) This report presents statistical information pertaining to the Federal
Aviation Administration, the National Airspace System, Airports,
Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents,
Aeronautical Production and Imports/Exports, and a Glossary of the
terms used in this publication.... Air carrier, Airport, Air traffic,
Airmen, Aircraft accidents, General aviation, Aeronautical production

AN (1) AD-A267 913/XAG

FG (2) 010500

050100

050900

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

POLICY AND PLANS

TI (6) FAA Air Traffic Activity. Fiscal Year 1991.

RD (11) 1991

PG (12) 241 Pages

RN (18) XJ-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *AIR TRAFFIC CONTROLLERS, *AIRPORT CONTROL TOWERS
AIRCRAFT, AIRPORTS, CONTROL CENTERS, FACILITIES, FLIGHT, PERSONNEL,

TERMINALS, TOWERS

ID (25) FAA(Federal Aviation Administration)

AB (27) This FAA publication furnishes terminal and en route air traffic
activity information of the National Airspace System. The data have
been reported by the FAA-operated Airport Traffic Control Towers
(ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service
Stations, Approach Control Facilities, and FAA contract-operated
towers. These reports are used as a guide in determining the need for
larger or additional facilities and possible increases in personnel at
existing facilities.... Airport operations, Instrument operations,
Aircraft handled, Instrument approaches, Total flight services

AN (1) AD-A275 265/XAG
FG (2) 010200
010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AIRPORT

PLANNING AND PROGRAMMING

TI (6) **Enplanement and All Cargo Activity.**

RD (11) 1991

PG (12) 288 Pages

RS (14) DOT/FAA/PP-93-1

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *CARGO HANDLING, *AIR TRANSPORTATION
INFORMATION SYSTEMS, DATA BASES

ID (25) *Air carriers

AB (27) The Enplanement and All-Cargo Activity publication is a summary of enplanement data extracted from the Air Carrier Activity Information System (ACAIS). The ACAIS is a database of revenue passenger enplanement data and all cargo landing data that support the Federal Aviation Administration's (FAA) Airport Improvement Program (AIP) entitlement activities.

AN (1) AD-A230 639/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) **Inhalation Toxicology. 10. Times to Incapacitation for Rats Exposed
Continuously to Carbon Monoxide, Acrolein, and to Carbon
Monoxide-Acrolein Mixtures**

AU (10) Crane, Charles R.
Sanders, Donald C.

Endecott, Boyd R.

RD (11) Dec 1990

PG (12) 26 Pages

RS (14) DOT/FAA/AM-90/15

RC (20) Unclassified report

DE (23) ACROLEINS, ATMOSPHERES, CARBON MONOXIDE,
CONCENTRATION(COMPOSITION),

EQUATIONS, EXPOSURE(GENERAL), GASES, INCAPACITATION, INHALATION,
INHIBITION, LABORATORY ANIMALS, POISONOUS GASES, POTENCY, RATS,

REGRESSION ANALYSIS, SYNERGISM, TOXIC HAZARDS, TOXICITY,
TOXICOLOGY

ID (25) Inhalation toxicology, Carbon monoxide, Acrolein, Irritant gas,
Co-acrolein, Toxicity

AB (27) Laboratory rats were exposed to experimental atmospheres of (a) carbon monoxide (CO) in air, (b) acrolein in air, and (c) to mixtures of CO and acrolein in air. The toxic potency of each of the three types of environments was evaluated toxicokinetically by measurement of time-to-incapacitation (t) as a function of toxic gas concentrations. Regression equations were derived that relate the observed t's to the concentrations of individual gases. Comparison of the combined-gas-exposure data with results obtained from the individual gas exposures indicated that there was no evidence of synergistic action, i.e., that the effect of the combination was never greater than that predicted by the sum of the two individual gas effects. Evidence did exist for an inhibitory or antagonistic effect of undefined mechanism when acrolein was present in the mixture at concentrations of lesser toxic potency than that of CO. An empirical equation was derived that allows the calculation of a predicted t for combinations of CO and acrolein concentrations within the ranges utilized in the experimental exposures.

AN (1) AD-A231 185/XAG

FG (2) 061100

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) **Inhalation Toxicology. 11. The Effect of Elevated Temperature on Carbon
Monoxide Toxicity**

AU (10) Sanders, Donald C.

Endecott, Boyd R.

RD (11) Dec 1990

PG (12) 18 Pages

RS (14) DOT/FAA/AM-90/16

RC (20) Unclassified report

DE (23) ATMOSPHERES, CARBON MONOXIDE, CHAMBERS, COMPARISON,
EQUATIONS,

EXPOSURE(GENERAL), HIGH TEMPERATURE, INCAPACITATION, INHALATION,
LABORATORY ANIMALS, PARAMETERS, RATS, SYNERGISM, TOXICITY,

TOXICOLOGY

ID (25) Toxicity, Carbon monoxide, Heat stress(Physiology)

AB (27) Laboratory rats were exposed (a) to experimental concentrations of

carbon monoxide in air at ambient temperature, (b) to elevated temperature atmospheres from 40 deg C to 60 deg C, and (c) to selected carbon monoxide (CO) concentrations at the elevated temperatures in (b). The incapacitating potency of each of the environments was evaluated by measurements of time-to-incapacitation (t sub i) as a function of CO concentration and/or temperature; incapacitation was defined operationally as loss of ability to walk inside a motor-driven, rotating cage enclosed in an exposure chamber. Comparison of data from the combined (CO + elevated temperature) exposures and exposures to CO and elevated temperatures alone indicated that incapacitation occurred earlier when CO inhalation was combined with a whole-body, elevated temperature environment than was observed for the same exposure parameters applied individually. No evidence for a synergistic effect was noted. An empirical equation was derived that allows the calculation of a predicted t sub i for combinations of CO and temperature within the ranges utilized in the experimental exposures.

AN (1) AD-A231 369/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Capital Investment Plan.

RD (11) Dec 1990

PG (12) 345 Pages

RS (14) DOT/FAA-TR-91-0053

RC (20) Unclassified report

DE (23) ADDRESSING, AERONAUTICS, AGING(MATERIALS), AIR SPACE, ARTIFICIAL SATELLITES, AUTOMATION, CIVIL AVIATION, CONTROL THEORY, INVESTMENTS, LONG RANGE(DISTANCE), LONG RANGE(TIME), PLANNING, POLICIES, SOUND, SYSTEM SAFETY

ID (25) *Aviation safety, *Civil aviation

AB (27) This is the Federal Aviation Administration's (FAA) first annual Aviation System Capital Investment Plan (CIP). The CIP describes the policies and strategies that the FAA will pursue in addressing key concerns of the National Airspace System (NAS). The Plan addresses safety, efficiency, traffic demands, aging equipment and facilities, and airspace use. It creates a foundation for evolution of the existing NAS through use of new technologies and development of new products obtained from continuing research. Long range advances in automation, communication, and satellite services that are being researched and developed will facilitate more automated control concepts, remove fixed-routing constraints, provide high levels of civil aviation system safety, and facilitate operations of future generations of aircraft. A sound planning process will provide the flexibility to capture the

opportunities that new technologies provide and use these new technologies to achieve the FAA's mission.

AN (1) AD-A238 315/XAG

FG (2) 040200

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) Establishment Criteria for Integrated Wind Shear Detection Systems: Low-Level Wind Shear Alert System (LLWAS), Terminal Doppler Weather Radar (TDWR), and Modified Airport Surveillance Radar

AU (10) Soffer, Evan P.

RD (11) Dec 1990

PG (12) 53 Pages

RS (14) FAA-APO-90-13

RC (20) Unclassified report

DE (23) AIRPORT RADAR SYSTEMS, AIRPORTS, COST EFFECTIVENESS, DECISION MAKING,

DETECTION, DETECTORS, DOPPLER RADAR, INVESTMENTS,

METEOROLOGICAL RADAR,

MODELS, SEARCH RADAR, TERMINAL FLIGHT FACILITIES, WIND SHEAR, YIELD

ID (25) *Doppler radar, *Wind shear, *Weather forecasting, Radar meteorology, Cost benefits, NPV(Net Present Value), LLWAS(Low Level Wind Shear Alert System), TDWR(Terminal Doppler Weather Radar)

AB (27) This report presents an integrated, site-specific, benefit-cost analysis of three wind shear detection systems: the low-level wind shear alert system (LLWAS), terminal doppler weather radar (TDWR), and airport surveillance radar modified for wind shear detection. Based on this analysis, a benefit-cost investment decision model has been developed. This investment decision (criteria) model will be incorporated into FAA-APO's Aviation Data Analysis (ADA) System. Application of the establishment criteria documented in this report will enable the FAA to prioritize alternative investments among wind shear detection equipment types as well as sites, so as to maximize the return on investment dollars. For purposes of APS-1 criteria, FAA toward airports with a net present value (NPV) of zero or greater for a particular wind shear detection system will be considered establishment candidates for that system. If more than one system yields an NPV greater than or equal to zero at a particular site, then the one with the highest (positive) NPV is recommended for that site.

AN (1) AD-A248 214/XAG

**FG (2) 010309
120100**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Census U.S. Civil Aircraft: Calendar Year 1990.

DN (9) Annual rept.

RD (11) 31 Dec 1990

PG (12) 394 Pages

RS (14) FAA-AMS-420

RC (20) Unclassified report

DE (23) *GENERAL AVIATION AIRCRAFT, *INVENTORY
AIR, AIRCRAFT, MODELS, TABLES(DATA)

ID (25) *Federal Aviation Administration, *U.S. Civil Aircraft

AB (27) This report presents information about the U.S. civil aircraft fleet.

It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner. Air carrier, general aviation, registered aircraft.

AN (1) AD-A229 791/XAG

FG (2) 010300

**CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC
CITY NJ**

**TI (6) Smoke and Extinguisher Agent Dissipation in a Small Pressurized
Fuselage.**

DN (9) Final rept.

AU (10) Abramowitz, A.

Neese, W.

Slusher, G.

RD (11) Nov 1990

PG (12) 45 Pages

RS (14) DOT/FAA/CT-89/31

RC (20) Unclassified report

DE (23) *FUSELAGES

AEROSOLS, AIRCRAFT, DISSIPATION, DOSAGE, FIRE EXTINGUISHERS, FIRE
EXTINGUISHING AGENTS, FLUORINATED HYDROCARBONS, GASES,

LIMITATIONS,

PASSENGERS, PILOTS, POLYMERS, PRESSURIZATION, RATES, SMOKE, TEST

AND

EVALUATION, THREATS, TOXICITY, VENTILATION, VISIBILITY

AB (27) A test study was conducted using Halon 1211 and Halon 1301 fire

extinguishing agents and aerosol smoke to study their behavior in a pressurized Cessna C-421B aircraft. Halon fire extinguishers were discharged and monitored at various locations to determine the concentrations of neat halon gases present, their dissipation rates and any resultant toxic threat to the occupants. Artificial smoke was also generated at various locations and was measured at three fixed locations in the aircraft, thereby providing localized visibility information as well as ventilation data. Peak halon concentrations were considered adequate to extinguish most fires. Halon dosages for the pilot and copilot were low or zero and those for the passengers were also low in relation to the toxic limits recommended. Keywords: Halon fire extinguishing agents, Smoke, Ventilation, Pressurized aircraft, Toxicity, Visibility. (JS)

AN (1) AD-A230 058/XAG

**FG (2) 050900
120500**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE**

**TI (6) Selection of Air Traffic Controllers for Automated Systems:
Applications from Current Research**

AU (10) Della Rocco, Pamela S.

Manning, Carol A.

Wing, Hilda

RD (11) Nov 1990

PG (12) 38 Pages

RS (14) DOT/FAA/AM-90/13

RC (20) Unclassified report

DE (23) AIR TRAFFIC CONTROLLERS, AUTOMATION, COGNITION, DECISION MAKING,
INFORMATION PROCESSING, JOBS, MENTAL ABILITY, METHODOLOGY,

PERCEPTION,

REASONING, SELECTION, SPATIAL DISTRIBUTION

ID (25) Air traffic control specialist ISSS (Initial Sector Suites), Cognitive
abilities, Personnel selection, Advanced Automation, AERA, Automation

AB (27) Over the next two decades, the Federal Aviation Administration's (FAA)

plan for new automated systems will change the air traffic control
specialist's (ATCS) job as many of the current controller's tasks

become automated. The purpose of this paper was to review the findings
from current research on selection of ATCS's that may guide the design

of selection systems for future controllers. To accomplish this two
lines of research were presented: 1) projected changes in job tasks

resulting from planned automation, and 2) the current ATCS selection

system. A study completed in 1987 estimated that 48 of 337 job tasks of the enroute controller would be substantially changed with implementation of the Initial Sector Suites (ISSS). In light of the projected changes, the current selection system was evaluated in terms of the methodologies used for selection and the utility and validity of those methodologies. The current job is a highly complex set of tasks and demands high levels and active application of certain cognitive abilities, such as spatial perception, information processing, reasoning and decision making. Evaluation of the changes projected in the job over the next two decades suggested that a similar performance-based selection system could maintain utility through implementation of the ISSS.

- AN (1) AD-A232 668/XAG**
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Differential GPS Terminal Area Test Results.
DN (9) Technical note Nov 89-Nov 90
AU (10) Persello, L. F.
RD (11) Nov 1990
PG (12) 61 Pages
RS (14) DOT/FAA/CT-TN90/48
RC (20) Unclassified report
DE (23) ACCURACY, BASE LINES, DATA BASES, DYNAMIC TESTS, DYNAMICS, ENVIRONMENTS, FLIGHT PATHS, FLIGHT TESTING, GLOBAL POSITIONING SYSTEM, LASER TRACKING, PROFILES, STATIC TESTS, STATICS, TERMINAL FLIGHT FACILITIES
ID (25) *Global positioning system, *Differential positioning system, *Terminal areas, Laser tracking, Very high frequency
AB (27) This report describes flight tests conducted by the Federal Aviation Administration (FAA) Technical Center to examine the performance of the Differential Global Positioning System (DGPS) in the Terminal Area. The tests employed a Convair 580 (CV-580) and a pair of Motorola Eagle Mini Rangers. With the advent of a maturing Global Positioning System (GPS) constellation, the FAA is assuming a more intensive stance in addressing the many questions/problems associated with GPS. These DGPS tests investigated the obtainable accuracy under static and dynamic conditions. The static tests employed survey points as a baseline. The dynamic tests incorporated Terminal Area flight profiles and nonprecision approaches using a laser tracker as a base line. The accuracy performance of DGPS showed an order of magnitude improvement

in the static environment and a 4-5 fold improvement in the dynamic environment over stand alone GPS. The DGPS tests were conducted in an effort to build an FAA DGPS data base to aid in addressing GPS questions/problems.

- AN (1) AD-A239 444/XAG**
FG (2) 010301
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Rotorcraft Master Plan.
RD (11) Nov 1990
PG (12) 54 Pages
RC (20) Unclassified report
DE (23) *HELICOPTERS
TILT ROTOR AIRCRAFT, ROTOR BLADES(ROTARY WINGS), HELIPORTS, PILOTS, COMMERCIAL AIRCRAFT, AIRCRAFT INDUSTRY, PASSENGERS, FLIGHT TRAINING
AB (27) Total rotorcraft operations are expected to double over the next 20 years, with air taxi and business operations leading early growth, and intercity commuter operations expanding in the out years. To support that growth will require adequate infrastructure, advanced aircraft technology, and an expanding supply of trained pilots. The tiltrotor, a proven new vertical lift technology, may play a significant role in establishing intercity commuter operations. Tiltrotors could operate between heliport facilities called vertiports, which are more elaborate and somewhat larger than today's average heliport. This technology has the potential to enhance National Airspace System (NAS) capacity at a fraction of the otherwise necessary investment in new or improved commercial airports. This vision is based on an overall strategy of positive action by private industry, the FAA, other Federal agencies, and state and local governments to encourage the expansion of rotorcraft operations both in current applications and in scheduled passenger and cargo markets in the 200-500 nautical mile range. By 2010, rotorcraft could provide as much as 10 percent of intercity passenger operations capacity in the NAS.
- AN (1) AD-A229 686/XAG**
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Using Simulation to Evaluate the Safety of Proposed ATC Operations and Procedures.
DN (9) Technical note

AU (10) Paul, Lee E.
RD (11) Oct 1990
PG (12) 27 Pages
RS (14) DOT/FAA/CT-TN90/22
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *SYSTEMS ANALYSIS, *SYSTEM SAFETY AVIATION SAFETY, CAPACITY(QUANTITY), CONTROL, ERRORS, LOSSES, MEASUREMENT, PREDICTIONS, SAFETY, SETTING(ADJUSTING), SIMULATION
AB (27) This report addresses some of the issues that arise when simulation is used to evaluate capacity-enhancing air traffic control (ATC) system changes that may also affect aviation safety. It examines the limitations of different approaches to the measurement and prediction of safety. A safety standard standard is proposed that is not based on meeting a predetermined or absolute criterion, but on the ability to demonstrate that the modified system is as safe as the present one -- assuming the present system is considered safe. If the intent of change is to improve system safety rather than to increase capacity, this approach would require showing significantly safer operations vis-a-vis the present standard and, perhaps, no loss of capacity. This approach is based on the concept of ATC simulation as a controlled experiment. It provides a defense against having results contaminated by a lack of complete realism in the simulation, by a paucity of hard data on the occurrence of system errors, and the by the difficulty of setting a standard for an acceptable probability of serious events. (KR)

AN (1) AD-A229 687/XAG
FG (2) 120500
120600
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) DATAS Hardware Diagnostic Tests.
DN (9) Technical reference
AU (10) Zvanya, John
RD (11) Oct 1990
PG (12) 43 Pages
RS (14) DOT/FAA/CT-TN90/44
RC (20) Unclassified report
DE (23) *DATA LINKS, *DIAGNOSTIC EQUIPMENT, *COMPUTERS, *RELIABILITY AVIONICS, COLLISION AVOIDANCE, DATA PROCESSING EQUIPMENT, DIAGNOSIS(GENERAL), ENVIRONMENTS, FREQUENCY, INFORMATION SYSTEMS, RADIOFREQUENCY, SIGNALS, SIMULATION, TEST AND EVALUATION, TRANSPONDERS,

VERIFICATION
ID (25) DATAS(Data Link Test and Analysis System)
AB (27) This document provides reference material for personnel using the Data Link Test and Analysis System (DATAS) for hardware diagnostic testing. Included in this document is a brief overall description of the DATAS, and a thorough description of how to operate the hardware diagnostic tests. The DATAS was originally conceived at the Federal Aviation Administration Technical Center by members of the Data Link project whose responsibilities include verification of Data Link systems reliability, interface protocols and system capacities. The DATAS was designed and fabricated at the FAA technical Center to provide such test and analysis capabilities. DATAS is capable of testing all components of the Data Link system. These components include: ATRCBS and Mode S transponders, avionics Data Link processors (ADLP), and all Data Link system interfaces. It will also provide the capability of Mode S simulation and 1030 and 1090 megahertz (MHz) radio frequency (RF) environment analysis for all beacon transmissions including Traffic Alert and Collision Avoidance Systems (TCAS). The DATAS has the capability of RF signal analysis within the frequency range of 950 to 1200 MHz. (KR)

AN (1) AD-A231 378/XAG
FG (2) 170703
120600
050200
250500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) NAS (HOST/ARTS IIIA) to VME Modem Interface ATC Interface Hardware Manual
AU (10) Wapelhorst, Leo J.
RD (11) Oct 1990
PG (12) 120 Pages
RS (14) DOT/FAA/CT-TN90/46
RC (20) Unclassified report
DE (23) AIR TRAFFIC CONTROL SYSTEMS, DATA LINKS, DATA PROCESSING EQUIPMENT, GROUND LEVEL, INTERFACES, MANUAL OPERATION, MODEMS, TEST AND EVALUATION
ID (25) *HARDWARE MANUALS, *AIR TRAFFIC CONTROL SYSTEMS, *DATA LINKS, INTERFACES, MODEMS
AB (27) This document is reference material for personnel using the National Airspace System (NAS) (HOST or ARTS IIIA) Air Traffic Control (ATC)

interface Subsystem. It was originally developed to be part of the Data Link Test and Analysis System (DATAS) in order to provide an interface between the NAS and the Ground Data Link Processor (GDLP). (Author)

AN (1) AD-A227 450/XAG

FG (2) 060400

060500

010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Use of Contact Lenses in the Civil Airman Population.

DN (9) Final rept.

AU (10) Nakagawara, Van B.

RD (11) Sep 1990

PG (12) 15 Pages

RS (14) DOT/FAA/AM-90/10

RN (18) XD-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *AVIATION MEDICINE, *CONTACT LENSES

ADVERSE CONDITIONS, AERONAUTICS, AIR FORCE PERSONNEL, AVIATION PERSONNEL, CIVIL AFFAIRS, DATA BASES, DEFECTS(MATERIALS), EDUCATION, EPIDEMIOLOGY, EYEGLASSES, LONG RANGE(DISTANCE), MODIFICATION,

PILOTS,

POLICIES, POPULATION, REGULATIONS, SAFETY, STRATIFICATION, UNITED STATES GOVERNMENT, VISION

AB (27) Federal Aviation Regulations permit the routine use of contact lenses by civilian pilots to satisfy the distant visual acuity requirements for obtaining the prevalence of both defective distant vision and contact lenses in the civil airman population is required to guide future medical certification decisions, policy changes, and education safety programs to aviation personnel. A descriptive, retrospective epidemiologic study was performed of active airmen by 5-year intervals for a 20-year period (1967 -1987) using FAA databases and publications. The percentage of airmen who use contact lenses quadrupled during the study period. When stratified by class of medical certificate and age, the prevalence rates for airmen with first-class medical certificates and older airmen showed the largest increases. The increasing use of contact lenses and the variety of design, materials, and applications which may be employed by the pilot population mandate ongoing review for adverse changes and safety consequences. Keywords: Vision, Contact lens, Epidemiology, Medical Certification. (sdw)

AN (1) AD-A227 486/XAG

FG (2) 010300

010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Development of a Crashworthy Seat for Commuter Aircraft.

DN (9) Final rept.

AU (10) Gowdy, Van

RD (11) Sep 1990

PG (12) 13 Pages

RS (14) DOT/FAA/AM-90/11

RC (20) Unclassified report

DE (23) *CRASHWORTHINESS, *AIRCRAFT SEATS

AIRCRAFT, AXES, DYNAMIC TESTS, ENERGY ABSORBERS,

FORCE(MECHANICS),

FRAMES, IMPACT, IMPACT TESTS, PASSENGERS, PEAK VALUES, PROTOTYPES, RANGE(DISTANCE), SPINAL COLUMN, VERTICAL ORIENTATION

AB (27) A series of dynamic impact tests were conducted using a prototype seat

with an energy absorbing mechanism as part of the seat pan. The seat

frame was designed to represent a typical commuter aircraft passenger

seat. Tests were conducted in an orientation simulating a vertical

impact with a 30-degree nose-down aircraft attitude. The impact

severity for these tests ranged from 15 to 33 Gs. Seat pan stroke and

occupant lumbar reaction forces were measured. Results indicate the

axial force measured in the lumbar spine of a fiftieth percentile

Hybrid II dummy can be limited to a peak value less than 1500 pounds

during vertical impact tests of 33 G with a seat pan stroke distance of

6.3 inches. Keywords: Commuter aircraft, Energy absorbing seat,

Vertical impact.

AN (1) AD-A228 655/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC CITY NJ

TI (6) Structural Tests of Air Aircraft Window Assembly Equipped with Smoke Evacuation Valve

AU (10) Wilson, Anthony

Cavage, William, Jr

RD (11) Sep 1990

PG (12) 20 Pages

RS (14) DOT/FAA/CT-TN89/44

RC (20) Unclassified report
DE (23) *STRENGTH(MECHANICS), *STRUCTURAL PROPERTIES, *AIRCRAFT EQUIPMENT,
*WINDOWS
AIR, AIRCRAFT, ASSEMBLY, EVACUATION, FRAMES, LOAD CELLS, MANAGEMENT
PLANNING AND CONTROL, MOMENTS, SMOKE, STRUCTURAL ENGINEERING, TEST AND
EVALUATION, TEST MANAGEMENT, TEST METHODS, VALVES
AB (27) This report presents the results of three tests performed on a window and window frame of a Boeing 707. The purpose of the test, conducted at the Federal Aviation Administration Technical Center, was to determine the maximum moment the window could withstand before becoming dislodged from its frame due to the failure of the window retention clips. The window assembly was modified to fit into a load machine. The loads were measured with a load cell and recorded on a Honeywell Test Management System. Keywords: Smoke evacuation, Smoke evacuation valve, Window structural strength. (KR)

AN (1) AD-A228 656/XAG
FG (2) 010600
230600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Airplane Systems Modifications for Improved Cabin Smoke Evacuation.

DN (9) Technical note

AU (10) Eklund, Thor I.

RD (11) Sep 1990

PG (12) 20 Pages

RS (14) DOT/FAA/CT-TN90/24

RC (20) Unclassified report

DE (23) *AIRCRAFT CABINS, *EVACUATION, *SMOKE
AIR, AIR CONDITIONING EQUIPMENT, AIR SUPPLIES, AIRCRAFT, AVIATION SAFETY, BOTTOM, BUOYANCY, COMBUSTION, COMPRESSORS, CONTROL SYSTEMS,

EMERGENCIES, ENGINE COMPONENTS, ENVIRONMENTS, FIRES, FLAMES, FLIGHT

TESTING, FLOW, FUSELAGES, INFLIGHT, MODIFICATION, PASSENGERS,

RAMJET

ENGINES, SURFACES, TEST VEHICLES, VALVES, VENTILATION, VISIBILITY, VOLUME

AB (27) Two concepts for improved aircraft in-flight evacuation were analyzed and tested. The concept definition and evaluation efforts involved an

additional ventilation outflow valve on the aircraft underside along with either increased ventilation air volume from the engine compressors or a supplemental ram air supply. Subsequent test aircraft modification involved addition of a pressure controlling outflow valve on top of the fuselage and upgraded engine bleed air volume flow for cabin air-conditioning. Ground and flight tests were conducted on a test B757 with buoyant and nonbuoyant theatrical smokes generated continuously in various places in the passenger cabin. Buoyant smoke could be localized only when generated in the vicinity of the upper lobe outflow valve, whether the valve was on the top or bottom of the fuselage. The buoyant smoke was formulated to have the same type flow behavior as a plume from the visible flames of a burning surface. The nonbuoyant smoke might be more representative of a smoldering material. Keywords: Environmental control system, Outflow valve, Emergency procedures, In-flight fire, Aviation safety. (KR)

AN (1) AD-A228 659/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Microwave Landing System (MLS) Back Azimuth Operational Issues Flight Tests.

DN (9) Technical note Dec 89-May 90

AU (10) Pugacz, Edward J.

RD (11) Sep 1990

PG (12) 23 Pages

RS (14) DOT/FAA/CT-TN90/3

RC (20) Unclassified report

DE (23) *AZIMUTH, *GUIDANCE, *MICROWAVE LANDING SYSTEMS, *RADAR TRACKING

ANGLES, FLIGHT, FLIGHT TESTING, FORMULATIONS, PLANNING, PLOTTING, QUESTIONNAIRES, SWITCHES, TEST AND EVALUATION

AB (27) This test plan describes a series of flight tests using Microwave Landing System (MLS) back azimuth guidance for missed approach and departure procedures. Issues to be addressed during these flight tests are: (1) The proper point in a missed approach to switch from approach azimuth to back azimuth guidance; (2) the largest MLS back azimuth offset angle usable for departures and missed approaches; and (3) the correct back azimuth full scale sensitivity. Approximately 10 industry pilots will participate as test subjects. The flights will be tracked by a radar tracker throughout each procedure. Individual and composite plots of each approach will be produced, and answers to in-flight and

post-flight questionnaires will be compiled. The processed data will be made available to the international aviation community to aid in the formulation of back azimuth usage guidelines. Keywords: Microwave landing systems. (rh)

AN (1) AD-A229 343/XAG

**FG (2) 210200
010300**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Generation of a Buoyant Plume of Artificial Smoke for Airplane Tests.

DN (9) Final rept.

AU (10) Eklund, Thor I.

RD (11) Sep 1990

PG (12) 27 Pages

RS (14) DOT/FAA/CT-90/9

RC (20) Unclassified report

DE (23) *BUOYANCY, *SMOKE GENERATORS

AIR, AIR FORCE EQUIPMENT, AIRCRAFT CABINS, COMMERCIAL AVIATION, DETECTORS, EVACUATION, FIRES, GAS FLOW, HELIUM, INFLIGHT, JET AIRCRAFT,

MATHEMATICAL MODELS, MILITARY AIRCRAFT, MIXING, OPTIMIZATION, PLUMES,

POSITION(LOCATION), RATIOS, TEST AND EVALUATION, TEST METHODS

AB (27) A buoyant artificial smoke generator was developed for airline test applications. In the device, theatrical smoke is mixed of helium and air. The total gas flow, the helium to air ratio, and the theatrical smoke particulate generation rate can all be varied in the device. A gas mixture of 50 percent each of helium and air has the buoyancy properties of air, alone, heated to 475 degrees Fahrenheit. The device was used in cabin smoke in an aircraft resulted in dramatically different behavior from the previously observed with nonbuoyant theatrical smoke. The buoyant smoke spread further through the aircraft in a manner that was not predicted by an analytical model on cabin smoke spread. Besides being used to assess airplane cabin smoke evacuation capability, the buoyant smoke generator has been used to evaluate smoke detector performance and optimal location in Air Force jet aircraft. Keywords: Smoke, Fire, Smoke evacuation, In-Flight fire, Helium, Buoyant. (SDW)

AN (1) AD-A229 391/XAG

FG (2) 010309

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aircraft Material Fire Test Handbook.

RD (11) Sep 1990

PG (12) 204 Pages

RS (14) DOT/FAA/CT-89/15

RC (20) Unclassified report

DE (23) *AIRCRAFT, *FIRE SAFETY, *MATERIALS, *HANDBOOKS

CIVIL AVIATION, COMMERCE, ENVIRONMENTS, EXPOSURE(GENERAL), FIRES, HANDBOOKS, HEAT, MANUFACTURING, REGULATIONS, TEST AND EVALUATION, TEST

EQUIPMENT, TEST METHODS

AB (27) In order to assure prescribed levels of fire safety in civil aircraft, the Federal Aviation Administration (FAA) requires that a variety of fire test methods be used to demonstrate the aircraft materials meet specified performance criteria when exposed to heat or flame. In principle, the specific test method required serves as a surrogate for the fire environment to which a given material could potentially be exposed, and the test criteria relate to the performance of the material in this fire environment. The purpose of the Aircraft Material Fire Test Handbook is to describe all FAA-required fire test methods for aircraft materials in a consistent and detailed format. The handbook provides information to enable the user to assemble and properly use the test methods. Moreover, to broaden the utility of the handbook, the appendices contain the following information: FAA fire safety regulations, FAA approval process, aircraft materials, regulatory methodology used by other countries, aircraft industry internal test methods and guidelines, laboratories actively using fire test methods, and commercial manufacturers of fire test equipment. (TTL)

AN (1) AD-A230 057/XAG

FG (2) 060500

061000

140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The FAA Altitude Chamber Training Flight Profile: A Survey of Altitude Reactions 1965-1989

AU (10) Valdez, Charles D.

RD (11) Sep 1990

PG (12) 12 Pages
RS (14) DOT/FAA/AM-90/12
RC (20) Unclassified report
DE (23) ALTITUDE CHAMBERS, CHAMBERS, FLIGHT, FLIGHT TRAINING, HEALTH, INSTRUCTORS, LEARNING, PROFILES, SAFETY, STUDENTS, TRAINING, ALTITUDE
CHAMBERS, CHAMBERS, ENVIRONMENTS, FLIGHT, FLIGHT TRAINING, HEALTH, INSTRUCTORS, LEARNING, PROFILES, SAFETY, STUDENTS, TRAINING
ID (25) Aerotitis media, Aerosinusitis, Evolved gases, Denitrogenation, *Altitude reactions, *Flight training, *Altitude chambers
AB (27) Reactions from 1,161 trainees out of 12,759 trainees subjected to the FAA altitude chamber training flights from 1965-1989 are annotated in this survey. Although there were some mild and expected reactions, these training profiles appear to provide a safe learning environment without compromising the student's health and safety. Inside chamber instructors did not fare as well, perhaps due to age and cumulative numbers of exposures, and recommendations are suggested for improved safeguards. (EMK)

AN (1) AD-A246 869/XAG

FG (2) 010500
170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Joint Federal Aviation Administration (FAA)/Civil Aviation Authority (CAA) Microwave Landing System (MLS) Area Navigation (RNAV) Flight Evaluations.

DN (9) Technical note

AU (10) Billmann, Barry
Magrogan, Michael
Mackin, Clifford
Pursel, Robert

RD (11) Sep 1990

PG (12) 67 Pages

RS (14) DOT/FAA/CT-TN91/17

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *MICROWAVE LANDING SYSTEMS
AIRPORTS, ALL WEATHER, AZIMUTH, DISTANCE MEASURING EQUIPMENT, FLIGHT,
INTERNATIONAL, INTEROPERABILITY, LANDING, NETHERLANDS, PILOTS, SECONDARY, SUPPORTS, UNITED STATES, WEATHER

AB (27) A series of flight evaluations were conducted at Cardiff and Heathrow Airports in the United Kingdom. The flight evaluation were jointly

conducted by the Kingdom of the Netherlands, the Civil Aviation Authority (CAA) of the United Kingdom, and the Federal Aviation Administration (FAA) of the United States of America. The flight evaluations were undertaken to validate recommendations made at the 13th All Weather Operations Panel (AWOP) Meeting of the International Civil Aviation Organization (ICAO). The recommendations addressed permissible Microwave Landing System (MLS) azimuth antenna offsets from the primary runway, by permissible parallel secondary runway locations, and the use of standard distance measuring equipment for computed centerline operations. In all cases, flight data validated the recommendations. Additionally, subject pilots expressed strong support for the advanced procedures they flew. Although not an objective of the evaluation, interoperability of MLS equipment manufactured in five different countries was demonstrated. Flight evaluations, MLS, RNAV, Advanced instrument procedures, ICAO.

AN (1) AD-A226 419/XAG

FG (2) 050900
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Correlates of Two Experimental Tests with Performance in the FAA Academy Air Traffic Control Nonradar Screen Program.

DN (9) Final rept.

AU (10) Schroeder, David J.
Dollar, Carolyn S.
Nye, Lendell G.

RD (11) Aug 1990

PG (12) 13 Pages

RS (14) DOT/FAA/AM-90/8

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *APTITUDE TESTS
REASONING, PERSONNEL SELECTION, SPECIALISTS, TRAINEES, PERFORMANCE(HUMAN), PREDICTIONS, INSTRUMENT DIALS, DIRECTIONAL, TRAINING, CORRELATION TECHNIQUES, REGRESSION ANALYSIS

ID (25) Academic success prediction

AB (27) This study was designed to determine the relationships among experimental tests, the tests currently used to select entrants into the FAA's Air Traffic Control Specialist (ATCS) Academy Nonradar Screening Program, and Academy success. A battery of paper-and pencil tests, including the Directional Headings Test (DHT) which was developed at the Civil Aeromedical Inst, and subsequently modified for

this study, and the Dial Reading Test (DRT) was administered to 1,225 students who entered in 1987. Scores on the current selection measures, the Multiplex Controller Aptitude Test (MCAT) and Abstract Reasoning Test, were obtained from the Office of Personnel Management (OPM). The pass, fail, and withdrawal rates for the sample were compared to performance levels on the experimental and OPM tests. Several Academy performance criteria and test results were intercorrelated and stepwise multiple regression analyses were conducted to predict overall Academy success and final grades. Results demonstrated that the DHT and DRT could be used to assess the potential of entrants to successfully complete the Academy Screen. Even though the current ATCS applicant group differs from those entering the Academy a decade ago on several dimensions (e.g., education and experience), the multiple correlation of the DHT, and MCAT scores with Academy success remained relatively unchanged. Results suggest there are other test measures which, when combined with the MCAT, would be better predictors than the existing battery of selection tests.

AN (1) AD-A226 596/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Right Bundle Branch Block as a Risk Factor for Subsequent Cardiac Events

AU (10) Hudson, Leslie S.

Booze, Charles F., Jr.

Davis, Audie W.

RD (11) Aug 1990

PG (12) 8 Pages

RS (14) DOT/FAA/AM-90/7

RN (18) XD-DOT/FAA/AM

RC (20) Unclassified report

DE (23) *ELECTROCARDIOGRAPHY, *HEART

ABNORMALITIES, ADVERSE CONDITIONS, AIR FORCE PERSONNEL, ATHEROSCLEROSIS, BUNDLES, CARDIOVASCULAR DISEASES, COMPUTER APPLICATIONS, CONTROL, CORONARY DISEASE, DATA BASES, IDENTIFICATION,

MEDICINE, MYOCARDIAL INFARCTION, QUESTIONNAIRES, RECORDS, RISK

AB (27) The identification of risk factors for adverse cardiac events is valuable to the certification of airmen. This study examines the importance of right bundle branch block (RBBB) as a risk for myocardial infarction (MI), atherosclerotic heart disease (ASHD) and coronary

heart disease (CHD). Using a non-concurrent prospective design, 433 Class I airmen between the ages of 35 and 60 years who had an RBBB on their electrocardiogram (ECG) in 1970 were matched to 338 control Class I airmen who had no abnormalities on their 1970 ECG. Using the longitudinal database maintained by the Federal Aviation Administration (FAA), the medical records of these airmen were screened for MI, ASHD, and CHD through the end of 1985. Questionnaires were sent to airmen with incomplete data on the computerized database. The first occurrence of any of these outcomes was considered an adverse cardiac event. In the case group, 24 cardiac events occurred (3.93/1,000 person-years) compared with 9 events in the control group (1.87/1,000 person-years). The relative risk was 2.012 with 95% confidence intervals of .994 to 4.484. The findings suggest an increased risk of adverse cardiac events but are of borderline statistical significance. (js)

AN (1) AD-A227 436/XAG

FG (2) 060400

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Evaluation of Functional Color Vision Requirements and Current Color Vision Screening Tests for Air Traffic Control Specialists.

DN (9) Final rept.

AU (10) Mertens, Henry W.

RD (11) Aug 1990

PG (12) 26 Pages

RS (14) DOT/FAA/AM-90/9

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COLOR VISION

ABNORMALITIES, AEROMEDICAL EVACUATION, AIR TRAFFIC CONTROLLERS, AVIATION PERSONNEL, COLOR CODING, COLORS, DEFICIENCIES, ERRORS, FREQUENCY, HIGH RATE, INFLIGHT, INTENSITY, JOBS, REQUIREMENTS, TEST

AND

EVALUATION, TOWERS

AB (27) An experiment was conducted to evaluate the relation of type and degree of color vision deficiency and aeromedical color vision screening test scores to performance of color-dependent tasks of Air Traffic Control Specialists. The subjects included 37 normal trichromats of which 6 had mild color abnormalities. Those subjects with color vision deficiency included 18 simple anomalous trichromats, 22 extreme anomalous trichromats, and 31 dichromats; both protan and deutan types were included. Simulations of ATC color tasks concerned color coding in

flight progress strips used a en route centers, and the Aviation Signal Light indicator light and aircraft lights as pertinent to ATC tower operations. Errors were rare among normals and those with mild color abnormalities in simulated normal operating conditions. Error frequency in the simulated ATC tasks was significantly higher among simple anomalous trichromats, and those with more severe deficiencies. The aeromedical screening tests were generally acceptable in terms of selecting individuals that did not make errors on the ATC tasks. These findings support the requirement that air traffic control personnel be normal trichromats. Recommendations for improvement of job-related color vision screening are discussed.

- AN (1) AD-A227 484/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Pilot Views of Montgomery County, Texas Automated FSS Services.
DN (9) Final rept.
AU (10) Manning, Carol A.
Schroeder, David J.
RD (11) Aug 1990
PG (12) 59 Pages
RS (14) DOT/FAA/AM-90/6
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS
AUTOMATION, TEXAS, PILOTS, USER NEEDS, QUESTIONNAIRES, SURVEYS, ACCEPTABILITY, RATINGS, COMMERCIAL AVIATION, AIR TRAFFIC CONTROLLERS,
WEATHER, TIME
ID (25) AFSS(Automated Flight Service Stations), Mongomery County(Texas), Briefings, Flight Service Stations
AB (27) The FAA has seldom assessed the satisfaction of pilot 'customers,' with the services provided by its air traffic facilities. Most available information about pilots' satisfaction with air traffic control services is anecdotal; thus, decisions affecting the users have been based on management's perceptions rather than on an objective measure of the flying public's satisfaction with the services provided. The purpose of this study was to assess user satisfaction with the services provided by one air traffic facility, the Montgomery County, Texas Automated Flight Service (AFSS). The study also provides the FAA with a model for assessing user satisfaction with other ATC services. Overall, pilots who responded to the survey were very satisfied with the

performance of the specialists at the Montgomery County AFSS, and were slightly less satisfied with the services provided by the facility. Private pilots were more satisfied than were airline transport pilots with most of the services. The pilots' perceptions of how the FSS weather briefers performed their jobs affected ratings of satisfaction with the facility's services. A significant area of dissatisfaction to pilots was the amount of time they thought was required to reach a pilot briefer, especially during inclement weather.

- AN (1) AD-A228 885/XAG
FG (2) 170703
010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC CITY NJ
TI (6) Differential Global Positioning System (DGPS) Test Plan.
DN (9) Technical note Nov 89-May 90
AU (10) Persello, L. F.
RD (11) Aug 1990
PG (12) 16 Pages
RS (14) DOT/FAA/CT-TN90/15
RC (20) Unclassified report
DE (23) *GLOBAL POSITIONING SYSTEM, *TERMINAL FLIGHT FACILITIES ACCURACY, AIRCRAFT LANDINGS, APPROACH, BASE LINES, DATA BASES, DYNAMIC TESTS, FLIGHT PATHS, HIGH RATE, LASER TRACKING, PLANNING, STATIC TESTS,
TEST AND EVALUATION
ID (25) DGPS(Differential Global Positioning System), Test planning
AB (27) The FAA will conduct Differential Global Positioning System (GPS) tests to address the demands for high levels of accuracy in the terminal area. The tests will employ a Convair 580 (CV-580) and two Motorola Eagle Mini Rangers. With the advent of the maturing GPS constellation, the FAA is assuming a more intensive stance in addressing the many questions/problems associated with GPS. These Differential GPS tests investigate the obtainable accuracy under static and dynamic conditions. The static tests will employ surveyed points as a base line. The dynamic tests will incorporate terminal area flightpaths and non-precision approaches using a laser tracker as a base line. The Differential tests will be conducted in an effort to build an FAA Differential GPS data base to aid in addressing GPS questions/problems. Keywords: Global positioning systems; Terminal flight facilities; Aircraft landings/approach. (edc)

AN (1) AD-A231 077/XAG

FG (2) 050600

050900

130600

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT SAFETY

AND STANDARDS

TI (6) A Guide to Ground Vehicle Operations on the Airport.

RD (11) Aug 1990

PG (12) 29 Pages

RS (14) DOT/FAA/AS-90-3

RC (20) Unclassified report

DE (23) AERONAUTICS, AIRPORTS, COMMERCIAL AVIATION, COMMUNITIES, DOCUMENTS,

DRIVERS(PERSONNEL), FOREIGN OBJECT DAMAGE, GROUND LEVEL, GROUND VEHICLES, JOB TRAINING, ORIENTATION(DIRECTION), RESOURCES, TRAINING

ID (25) Ground support equipment operators, Airport operations, Instructional guide, Air traffic control tower, Airports, Ground support equipment, Operation, Foreign object damage, Security, Safety, Training, Landing fields, Civil aviation, Personnel management, Regulations, Emergencies, Diagrams, Traffic, Motor vehicle accidents, Handbooks

AB (27) Some airport operators, airlines, and fixed base operators have extensive formal training programs for employees whose duties involve operating a ground vehicle on the air operations area. However, many rely solely on informal on-the-job training. In an effort to improve the safety of ground vehicle operations on airports, the FAA developed this guide to ground vehicle operations. The guide provides airport orientation and operational information and would be used as a resource document by the airport operators and other members of the aviation community responsible for training ground vehicle operators. In addition to orientation and operational information, the guide touches on some other areas that a ground vehicle operator may encounter such as Foreign Object Damage, security, and reporting emergencies. (emk)

AN (1) AD-A245 241/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) Establishment and Discontinuance Criteria for Airport Traffic Control Towers.

RD (11) Aug 1990

PG (12) 54 Pages

RS (14) FAA-APO-90-7

RC (20) Unclassified report

DE (23) ACCIDENTS, AIRCRAFT, AIRPORT CONTROL TOWERS, AIRPORTS, BENEFITS,

CONSTRUCTION, COSTS, DIFFERENTIALS(MECHANICAL), ECONOMIC ANALYSIS,

EFFICIENCY, ESTIMATES, FLIGHT, INVESTMENTS, RATES, REDUCTION, SIZES(DIMENSIONS), TIME, TOWERS, TRAFFIC

ID (25) *Airport control towers, Accidents, Airport, Aviation, Benefits, Benefit-cost, Collisions, Control tower, Controller, Costs, Criteria, Economic analysis

AB (27) This report presents revised criteria for VFR Airport Traffic Control Tower establishment and discontinuance based on an economic analysis of tower benefits and costs. In compliance with P.L. 100-223, the previous tower establishment and discontinuance criteria have been revised to eliminate distinction according to aircraft size. In addition, benefit estimation procedures have been updated to reflect accident rate differentials between towered and nontowered airports experienced during the period 1983 to 1986. Cost reflect those experienced during 1988 by the FAA for tower construction, equipment, and operation. Site-specific activity forecasts are used to estimate tower benefits from prevented collisions between aircraft, other prevented accidents, and reduced flying time. The present value of these safety and efficiency benefits are compared with the present value of tower costs over a fifteen-year time frame. Establishment costs include annual costs for staffing, maintenance, equipment, supplies and leased services and investment costs for facilities, equipment, and operational start up. A location becomes a candidate for tower establishment when the benefits which derive from operating the tower exceed the costs; a tower becomes a candidate for discontinuance, when the costs of continued operation exceed the benefits. Application of these criteria enable the Federal Aviation Administration to prioritize investments among alternative sites according to the greatest return in benefits for dollar investments.

AN (1) AD-A225 223/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Replication of NASPAC Dallas/Fort Worth Study.

DN (9) Technical note

AU (10) Baart, Douglas
Cheung, Anny
Richie, Joseph
Pomerantz, Arthur
RD (11) Jul 1990
PG (12) 27 Pages
RS (14) DOT/FAA/CT-TN90/26
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS
SIMULATION, COMPUTER PROGRAMS, AIR SPACE
AB (27) This report describes a simulation study conducted at the Federal Aviation Administration (FAA) Technical Center using the National Airspace System Performance Analysis Capability (NASPAC). The simulation was an attempt to reproduce a study by The MITRE Corporation which examined the effects of the Dallas/Fort Worth (D/FW) Metroplex Plan on NAS delays and throughput. The results of the study closely approximated the results found in the earlier simulation. (SDW)

AN (1) AD-A225 225/XAG
FG (2) 010200
010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Location of Commercial Aircraft Accidents/Incidents Relative to Runways.
DN (9) Final rept.
AU (10) David, Robert E.
RD (11) 01 Jul 1990
PG (12) 85 Pages
RS (14) DOT/FAA/AOV-90-1
RC (20) Unclassified report
DE (23) *AVIATION ACCIDENTS, *COMMERCIAL AIRCRAFT
AIR TRANSPORTATION, AIRCRAFT, AIRPORTS, COMMERCE,
POSITION(LOCATION),
RANGE(DISTANCE), RIGHT ANGLES, RUNWAYS, SAFETY, TRANSPORTATION,
UNITED STATES
AB (27) The location of an aircraft involved in an accident or incident may be documented by the National Transportation Safety Board and the Federal Aviation Administration during the course of their investigation. When available, it will appear in the record of the individual investigation. However, this location information is not available from either of these agencies in a summary form. This study was undertaken to compile in one document the location relative to the runway of these

accidents/incidents for aircraft involved in commercial air transportation in the United States. The study examined accidents/incidents that occurred from 1978 to 1987. Since it is intended that this information will be used mainly to make decisions on individual airports, no attempt was made to reach conclusions or make recommendations based on the data. The accidents/incidents used for this study were categorized as undershoots, landings off the runway, veeroffs, overruns, and other in the vicinity of the airport. The aircraft location was recorded in terms of the distance along the runway centerline or extended centerline (X distance) and the perpendicular distance from the centerline or extended centerline (Y distance). Keywords: Accident, Incident, Undershoot, Landing off, Veeroff overrun. (SDW)

AN (1) AD-A225 227/XAG
FG (2) 010500
010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
POLICY AND P LANS
TI (6) Terminal Area Forecasts: FY 1990-2005.
RD (11) Jul 1990
PG (12) 526 Pages
RC (20) Unclassified report
DE (23) *AIR CONTROL CENTERS, *TERMINAL FLIGHT FACILITIES
AERONAUTICS, AIR TRAFFIC CONTROL SYSTEMS, AIR TRANSPORTATION,
AIRCRAFT,
AIRCRAFT INDUSTRY, AIRPORTS, APPROACH, CONTRACTS, FORECASTING,
PLANNING, RADAR, TOWERS, UNITED STATES
AB (27) This report contains forecasts of aviation activity of 854 airports in the United States for fiscal years 1990-2005. These include 398 airports with FAA air traffic control towers and radar approach control service and 17 FAA contract towers. For each airport, detailed forecasts are made for the four major uses of the air traffic system: air carriers, air taxi/commuters general aviation, and military. Summary tables contain national, FAA regional, and State aviation data and other airport specific highlights. The forecasts have been prepared to meet the budget and planning needs of the FAA and to provide airport-specific information that can be used by State and local aviation authorities, the aviation industry, and the general public. Keywords: Airport forecasts, Aviation activity, Terminal area forecasts, Enplanements, Aircraft operations, Air carrier, Commuter, Air taxi, General aviation, Military aviation.

AN (1) AD-A228 547/XAG

FG (2) 010500

040200

010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analysis of Heliport Environmental Data; Intracoastal City.

DN (9) Technical note

AU (10) Weiss, Rosanne M.

RD (11) Jul 1990

PG (12) 80 Pages

RS (14) DOT/FAA/CT-TN89/43

RC (20) Unclassified report

NO (21) Includes errata sheet dated Jul 90. See also Rept. no.

DOT/FAA/CT-TN87/54.

DE (23) *HELIPORTS, *ROTARY WING AIRCRAFT, *WIND VELOCITY DATA ACQUISITION, ENVIRONMENTS, HELICOPTERS, PETROLEUM PRODUCTS, PLOTTING, TRANSMITTERS, VECTOR ANALYSIS, WEIGHT, WIND, WIND DIRECTION

AB (27) During a 2-day period in May 1988, heliport environmental data were collected at Petroleum Helicopter Incorporated's Heliport in Intracoastal City, LA. The purpose of this data collection activity was to gather measurements of rotorwash at a heavy use heliport frequented by larger helicopters with higher gross weights than observed during previous data collection activities. The previous data collection activities are documented in Technical Note DOT/FAA/CT-TN87/54, I, titled, Analysis of Heliport Environmental Data: Indianapolis Downtown Heliport, Wall Street Heliport, Volume I, Summary. During this operation, ten wind vector transmitters were situated at various locations around the facility in order to gather information to describe the rotorwash induced wind speed and wind direction changes. This report documents the results of this data collection activity. The data collection and analysis methodology are explained. Graphical presentations of the heliport environment and of rotorwash induced wind speeds and wind speed and direction changes are included. The Concepts Analysis Division Report, ACD-330-89-10, Analysis of Heliport Environmental Data, Intracoastal City, LA, contains the heliport wind speed and direction plots for each flight. Keywords: Rotorwash, Rotorcraft, Rotor tip clearance. (kr)

AN (1) AD-A223 480/XAG

FG (2) 050900

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Studies of Poststrike Air Traffic Control Specialist Trainees. 3. Changes in Demographic Characteristics of Academy Entrants and Biodemographic Predictors of Success in Air Traffic Controller Selection and Academy Screening.

DN (9) Final rept.

AU (10) Collins, William E.

Nye, Lendell G.

Manning, Carol A.

RD (11) Jun 1990

PG (12) 20 Pages

RS (14) DOT/FAA/AM-90/4

RC (20) Unclassified report

NO (21) See also report 1, dated Jun 84, AD-A147 892.

DE (23) *AIR TRAFFIC CONTROLLERS, *TRAINEES, *SPECIALISTS APTITUDE TESTS, BIOGRAPHIES, DEMOGRAPHY, DISCRIMINATE ANALYSIS, DISCRIMINATION, FUNCTIONS, PREDICTIONS, QUESTIONNAIRES, SELECTION, VARIABLES

AB (27) A Biographical Questionnaire (BQ) was completed by 3,578 air traffic control students who entered the FAA Academy between October 1985 and September 1987. The demographic characteristics of these more recent Academy trainees (from a more stabilized poststrike selection process) were compared with two previous groups of Academy entrants. The impact of biodemographic characteristics on success in ATCS training was evaluated for all entrants, and then for gender and minority status subgroups. Also, results were obtained from the aptitude tests that were used to select the Academy entrants. Pooled within-groups correlations between the discriminating variables and the canonical discriminant function were calculated to determine the characteristics related to Academy pass/fail status. Some of the variables that were significantly related to Academy performance included high school math grades, personal performance expectations, age, and the number of times an ATCS applicant had taken the qualifying aptitude tests. The most consistent and most important predictor of success was the average grade in high school mathematics courses, while other predictors had varying significance depending on the demographic subgroup. While the age of Academy students (despite the age-30 limitation) bears a strong and consistent relationship to Academy success, other biodemographic factors can be used to improve recruitment and selection of ATCSs. (sdw)

AN (1) AD-A224 512/XAG

FG (2) 060500
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) **Medically Disqualified Airline Pilots in Calendar Years 1987 and 1988.**

DN (9) Final rept.

AU (10) Downey, Leslie E.
Dark, Shirley J.

RD (11) Jun 1990

PG (12) 11 Pages

RS (14) DOT/FAA/AM-90/5

RC (20) Unclassified report

DE (23) *COMMERCIAL AVIATION, *HEALTH SURVEYS, *PILOTS CONSCIOUSNESS, CORONARY ARTERIES, CORONARY DISEASE, MEDICAL RESEARCH,

HIGH RATE, MYOCARDIAL INFARCTION, PATHOLOGY, RATES

ID (25) Certification

AB (27) This study presents comprehensive data reflecting pertinent denial rates regarding the medical and general attributes of those airline pilots denied medical certification in calendar years 1987 and 1988. The overall annual denial rate of this group is 4.3 per 1,000 active airline pilots. Age-specific denial rates for airline pilots increase to the highest rate at age interval 55-59. The most significant causes for denial by pathology series are: (1) cardiovascular; (2) neuropsychiatric; and (3) the miscellaneous category. Denials for cardiovascular reasons account for 34% of all denials in this airline pilot group. The most significant causes for denial by specific pathology are: (1) coronary artery disease; (2) use of disqualifying medications; (3) psychoneurotic disorders; (4) myocardial infarction; and (5) disturbance of consciousness. These 5 specific causes account for 30% of all causes for denial. Keywords: Medical certification denials; Airline pilots. (CP)

AN (1) AD-A226 707/XAG

FG (2) 170703
010500
050200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) **A Glossary of Terms, Definitions, Acronyms, and Abbreviations Related to the National Airspace System (NAS).**

DN (9) Technical note

AU (10) Fabry, John M.

RD (11) Jun 1990

PG (12) 847 Pages

RS (14) DOT/FAA/CT-TN89/53

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIR NAVIGATION DICTIONARIES, ABBREVIATIONS, CIVIL AVIATION, DOMESTIC, INTERNATIONAL, AIR TRAFFIC CONTROL TERMINAL AREAS, AIR SPACE, COMMUNICATION AND RADIO SYSTEMS, REGULATIONS

ID (25) *National airspace system, Acronyms

AB (27) This unofficial glossary was compiled to provide a common understanding of terms related to the National Airspace System (NAS). The terms contained in this glossary are primarily defined in an operational sense, and are applicable to users, operators and maintainers of the NAS. This document is not intended to be an arbiter of the 'official' definition; rather, it is intended to be a general listing of terms, definitions, acronyms and abbreviations related to NAS projects, system programming, to contractors' documents and terminology, and to miscellaneous topics. NAS is defined as the system of air navigation and air traffic control encompassing communication facilities, air navigation facilities, airways, controlled airspace, special use airspace, and flight procedures authorized by Federal Aviation Regulations for domestic and international aviation.

AN (1) AD-A273 738/XAG

FG (2) 010500
050300
170700
050400
010200
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) **Establishment Criteria for LORAN-C Approach Procedures**

AU (10) Taylor, Daniel E.
Hoffer, Stefan N.

RD (11) Jun 1990

PG (12) 38 Pages

RS (14) FAA-APO-90-5
RN (18) XH-FAA-APO
RC (20) Unclassified report
DE (23) *AIRPORTS, *ECONOMIC ANALYSIS, *LORAN, *NAVIGATIONAL AIDS, *REGULATIONS, *AVIATION SAFETY, *AIR TRAFFIC CONTROL SYSTEMS AIRCRAFT, APPROACH, BENEFITS, CONTROL, COSTS, CYCLES, ECONOMICS, EFFICIENCY, FACILITIES, FLIGHT, INVESTMENTS, LIFE CYCLE COSTS, LIFE CYCLES, MANAGEMENT, PASSENGERS, RESOURCES, RUNWAYS, SITES, STANDARDS,
TOWERS, TRAFFIC, WEATHER, CIVIL AVIATION
ID (25) Aviation regulations, *LORAN(Long Range Aid to Navigation), Nonprecision aircraft approaches, Operational efficiency, Federal Aviation Administration, Federal regulations, Rulemaking
AB (27) This report presents criteria for the establishment and discontinuance of LORAN-C nonprecision approaches. In compliance with P.L. 100-223, which requires that establishment criteria for airport traffic control towers and other navigational aids be promulgated via rulemaking, these criteria have been issued as Federal regulations and published at 14 CFR Part 170, Subpart C--LORAN-C. They were effective September 10, 1993. The criteria for LORAN-C approaches require that, to be eligible for establishment, a candidate runway must meet all FAA standards for nonprecision approaches and must have life-cycle benefits that exceed life-cycle costs. Benefits of LORAN-C approaches are in the form of improved efficiency associated with lower approach minima. Lower minima permit runways to remain open at times when weather conditions would otherwise have closed an airport, thereby reducing flight disruptions. Site-specific activity forecasts are used with explicit dollar values assigned to passenger time and aircraft operating costs to provide a basis for comparing benefits to costs. Application of these criteria enable the Federal Aviation Administration to prioritize investments among alternative airports in a way that will maximize the benefits produced for the resources used. Airport, Aviation, Benefits, Benefit-cost, Costs, Economic analysis, Establishment criteria, LORAN-C, Navigational facility, Nonprecision approach, Operational efficiency, Runway.

AN (1) AD-A223 686/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Data Link Test and Analysis System/ATCRBS Transponder Test System.
DN (9) Technical note
AU (10) Van Dongen, John

RD (11) May 1990
PG (12) 159 Pages
RS (14) DOT/FAA/CT-TN90/7
RC (20) Unclassified report
DE (23) *AIR NAVIGATION, *DATA LINKS
COMPUTER PROGRAMS, DATA ACQUISITION, DOCUMENTS, TEST AND EVALUATION,
TRANSPONDERS
AB (27) This document is reference material for personnel using or making software changes to the Data Link Test and Analysis System (DATAS) for Air Traffic Control Radar Beacon System (ATCRBS) transponder testing and data collection. This is one of a series of documents to be published on DATAS. Keywords: Transponder (testing of), FAA, Data link, Data link test and analysis system, DATAS, Air navigation and guidance. (JG)

AN (1) AD-A224 256/XAG
FG (2) 010301
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) FAA Rotorcraft Research, Engineering, and Development Bibliography 1962-1989.
DN (9) Report bibliography
AU (10) Smith, Robert D.
RD (11) May 1990
PG (12) 169 Pages
RS (14) DOT/FAA/RD-90/1
RC (20) Unclassified report
DE (23) BIBLIOGRAPHIES, DOCUMENTS, HELICOPTERS, HELIPORTS, INDEXES, POWERED
LIFT, ROTARY WING AIRCRAFT, TILT ROTOR AIRCRAFT, VEHICLES
AB (27) This report is a supplement to 'FAA Helicopter/Heliport Research, Engineering, and Development - Bibliography, 1964 - 1986' (FAA/PM-86/47) published in November 1986 (NTIS accession number ADA 174 697) and to 'FAA Rotorcraft Research, Engineering, and Development Bibliography, 1962 -1988' (FAA/DS-89/03) published in March 1989 (ADA 207 162). Both bibliographies are limited to documents in which the research, engineering, and development elements of the FAA were involved as sponsors, participants, or authors. This bibliography contains the abstracts of 68 technical reports. The indexes in this document address these 68 reports as well as the 53 reports in FAA/DS-98/03 and the 133 reports in FAA/PM-86/47. Keywords: Helicopters

bibliographies/indexes; Heliports; Rotorcraft; Tilt rotor aircraft; Vertiports; Powered-lift vehicles. (EDC)

AN (1) AD-A226 542/XAG

FG (2) 010500

010301

010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Heliport Visual Approach Surface High Temperature and High Altitude Tests.

DN (9) Technical note

AU (10) Samph, Suzanne

Weiss, Rosanne M.

Wolf, Christopher J.

RD (11) May 1990

PG (12) 85 Pages

RS (14) DOT/FAA/CT-TN89/34

RC (20) Unclassified report

DE (23) *HELIPORTS, *FLIGHT MANEUVERS, *APPROACH, *HELICOPTERS

ACCEPTABILITY, ANGLES, AUXILIARY, CLIMATE, FLIGHT PATHS, FLIGHT TESTING, GLOBAL POSITIONING SYSTEM, GRAPHICS, HIGH ALTITUDE, HIGH TEMPERATURE, LANDING FIELDS, NEW MEXICO, ONBOARD,

PERFORMANCE(HUMAN),

PILOTS, PROFILES, STATISTICAL ANALYSIS, SUMMER, SURFACE PROPERTIES, SURFACES, TAKEOFF, TEST AND EVALUATION, VISUAL FLIGHT RULES,

WORKLOAD,

FLIGHT CONTROL SYSTEMS

ID (25) Kirkland Air Force Base, H-2 Aircraft, Hot climate, FATO(Final Approach Takeoff Area)

AB (27) During the summer of 1988 flight tests were conducted at Kirkland AFB, Albuquerque, New Mexico, at an auxiliary landing field. The purpose of these flights was to examine the current heliport approach/departure surface criteria under hot climate and/or high altitude conditions as defined in the Heliport Design Advisory Circular and to verify or modify these surfaces, if appropriate. Data were collected using a Bell UH-1 helicopter for 7.125, 8.0, and 10.0 straight-in approach surfaces. Also, straight-in departure surfaces of 7.125, 10.0, and 12.0 were used. In addition to these procedures, the pilots were able to choose any angle of approach and departure. All maneuvers were tracked using an onboard Global Positioning System (GPS) system. This report documents the results of this activity. It describes the flight test and evaluation method and addresses technical as well as operational

issues. It provides statistical and graphical analysis of pilot performance along with a discussion of pilot subjective opinions concerning the acceptability and perceived workload, safety, and control margins associated with the procedures flown. Keywords: Heliports; Surface properties; Flight profiles; High temperature; Approach/takeoff; Visual flight rules. (RWJ)

AN (1) AD-A227 355/XAG

FG (2) 010300

010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Proceedings of the AIAA/FAA Joint Symposium on General Aviation Systems Held in Ocean City, New Jersey on 11-12 April 1990

AU (10) Ferrara, Augusto

Lawrence, Dave

Blake, Janine

RD (11) May 1990

PG (12) 397 Pages

RS (14) DOT/FAA/CT-90/11

RC (20) Unclassified report

DE (23) *GENERAL AVIATION AIRCRAFT

AIR TRAFFIC CONTROL SYSTEMS, FUELS, SPECTRA, SYMPOSIA

AB (27) The 1990 AIAA/FAA Joint Symposium on General Aviation Systems was the result of the combined efforts of the AIAA General Aviation Systems Technical Committee and the Federal Aviation Administration Technical Center. This symposium offered the opportunity to present and review the current state of the art in research that is being conducted in support of general aviation. All told, the papers presented covered the entire spectrum of research and the participants had the opportunity to hear presentations on everything from alternate fuels to developments in air traffic control. Keywords: Proceedings, General aviation systems. (sdw)

AN (1) AD-A223 177/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Position Computation without Elevation Information for Computed Centerline Operations.

DN (9) Technical note

AU (10) Billman, Barry R.

Wolf, Christopher J.

RD (11) Apr 1990

PG (12) 24 Pages

RS (14) DOT/FAA/CT-TN89/42

RC (20) Unclassified report

DE (23) *NAVIGATION COMPUTERS, *RUNWAYS, *APPROACH INDICATORS
ACCEPTABILITY, ACCURACY, ALGORITHMS, ALL WEATHER, AZIMUTH,
COMPUTATIONS, CONFIGURATIONS, ELEVATION, INPUT, INSTRUMENTATION,
MEMORY

DEVICES, MICROWAVE LANDING SYSTEMS, PANELS, PARAMETERS,
POSITION(LOCATION), POWER, REQUIREMENTS, SITES, THREE DIMENSIONAL

AB (27) Computed centerline approaches can be divided into two subclasses:

approaches to an instrument runway with an offset azimuth
configuration, and approaches to a runway parallel to the primary
instrumented runway. The use of lateral position computation algorithms
that do not require an input elevation parameter have been proposed for
situations where a full three-dimensional algorithm would be difficult
in terms of memory requirements or computational power. An
investigation of the impact of siting configurations on the accuracy of
this type of algorithm was necessary to determine its acceptability for
different categories of operation. This report presents the results of
this investigation. Keywords: Microwave Landing System (MLS), Area
Navigation (RNAV), International Civil Aviation Organization (ICAO),
All Weather Operations Panel (AWOP). (kr)

AN (1) AD-A232 669/XAG

FG (2) 010500

170703

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC
CITY NJ**

TI (6) Chicago O'Hare Simultaneous ILS Approach Data Collection and Analysis.

DN (9) Technical note Jan 89-Feb 90

AU (10) Thomas, James

Timoteo, Dominic

RD (11) Apr 1990

PG (12) 149 Pages

RS (14) DOT/FAA/CT-TN90/11

RC (20) Unclassified report

DE (23) AERODYNAMIC CHARACTERISTICS, AIRCRAFT, DATA ACQUISITION,
DISPERSING,

FLIGHT, INSTRUMENT LANDINGS, INTERNATIONAL AIRPORTS, LANDING AIDS,
MEASUREMENT, NAVIGATION, POSITION(LOCATION)

ID (25) *Instrument landings, *Air traffic control systems, Airport, Approach,

Runways

AB (27) Data on aircraft executing Simultaneous ILS Approach in Instrument
Meteorological Conditions were collected at Chicago O'Hare
International Airport (ORD) between January 24 and March 14, 1989, for
the purposes of analyzing the Instrument Landing System (ILS)
navigational characteristics of these aircraft. Aircraft position data
were collected using the in-place ORD Airport Surveillance Primary and
Secondary radars. The data were reduced and analyzed at the FAA
Technical Center to provide a measure of dispersion about the approach
centerline and containment within various zones and envelopes of
interest surrounding the approach centerline. Conclusions concerning
the approach centerline. Conclusions concerning the approach flight
characteristics are drawn and recommendations are made concerning
potential applications.

AN (1) AD-A219 165/XAG

FG (2) 010500

170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

POLICY AND PLANS

**TI (6) FAA (Federal Aviation Administration) Aviation Forecasts, Fiscal Years
1990-2001.**

RD (11) Mar 1990

PG (12) 250 Pages

RS (14) FAA-AP0-90-1

RC (20) Unclassified report

DE (23) *AERONAUTICS, *PLANNING PROGRAMMING BUDGETING, *FORECASTING
AIR TRANSPORTATION, AIRCRAFT INDUSTRY, AIRPORTS, CONTROL, COSTS,
ECONOMICS, FLIGHT, FUELS, GROWTH(GENERAL), INFLIGHT, PLANNING,
STATIONS, TOWERS

AB (27) This report contains the Fiscal Years 1990-2001 Federal Aviation
Administration (FAA) forecasts of aviation activity at FAA facilities.

These include airports with FAA control towers, air route traffic
control centers, and flight service stations. Detailed forecasts were
made for the four major users of the National Aviation System: air
carriers, air taxi-commuters, general aviation and the military. The
forecasts have been prepared to meet the budget and planning needs of
the constituent units of the FAA and to provide information that can be
used by state and local authorities, by the aviation industry, and by
the general public. The overall outlook for the forecast period is the
continued economic growth, rising real fuel prices, and moderate
inflation. Based upon these assumptions, aviation activity by fiscal

year 2001 is forecast to increase by 29.0 percent at towered airports (commuters, 48.2 percent; air carriers, 33.6 percent; general aviation, 25.4 percent; military, 0.0 percent), 30.1 percent at air route traffic control centers (commuters, 51.9 percent; air carriers, 33.1 percent; general aviation 30.5 percent; military, 0.0 percent), and 5.1 percent in flight services performed. Hours flown by general aviation are forecast to increase 19.2 percent and revenue passenger miles (RPM's) are forecast to increase 67.8 percent, with scheduled international RPM's forecast to increase by 113.2 percent; and regionals/commuters RPM's forecast to increase by 157.1 percent. (sdw)

AN (1) AD-A221 591/XAG

FG (2) 010500

040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analysis of Distributions of Visual Meteorological Conditions (VMC) heliport Data.

DN (9) Technical note

AU (10) Wolf, Christopher J.

RD (11) Mar 1990

PG (12) 1054 Pages

RS (14) DOT/FAA/CT-TN89/67

RC (20) Unclassified report

DE (23) *HELIPORTS, *METEOROLOGICAL DATA, *VISUAL FLIGHT RULES DATA REDUCTION, NORMAL DISTRIBUTION, STATISTICAL DISTRIBUTIONS, SURFACES, VALIDATION, VISUAL PERCEPTION, WEATHER FORECASTING

ID (25) VMC(Visual Meteorological Conditions)

AB (27) The FAA Technical Center's Visual Meteorological Conditions (VMC) project was designed to provide data for the validation of the Heliport Design Advisory Circular (AC 150/5390-2) visual approach/departure surface criteria. Procedures for the analysis of data collected during this project were specified by the Design and Operations Criteria Division, AAS-100. These procedures are based on an assumption of the Gaussian, or Normal, distribution. During the data reduction and analysis phase of the VMC project, questions were raised as to validity of the assumption of the Normal distribution for the characterization of VMC data. This report documents an effort undertaken to look at the VMC data for the purpose of drawing conclusions about the proper distributional assumption. Several different procedures were used to test the original assumption. This report provides information on the tests used in this effort and on several alternate distributions, i.e., the Beta and Gamma distributions. (jhd)

AN (1) AD-A223 176/XAG

FG (2) 170300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) An Evaluation of the Accuracy of a Microwave Landing System Area Navigation System at Miami/Tamiami, Florida Airport

AU (10) Macklin, Clifford W.

RD (11) Mar 1990

PG (12) 23 Pages

RS (14) DOT/FAA/CT-TN89/40

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS

ACCURACY, AIRCRAFT, AIRPORTS, ALGORITHMS, FLIGHT, FLIGHT TESTING, FLORIDA, GLIDE SLOPE, INSTRUMENT LANDINGS, LANDING AIDS, NAVIGATION, POSITION(LOCATION), PROTOTYPES, RUNWAYS, TEST BEDS

AB (27) A series of flight tests were performed by the Federal Aviation Administration (FAA) Technical Center at the Miami/Tamiami Florida Airport to demonstrate the operation and capabilities of a prototype Microwave Landing System (MLS) Area Navigation System (RNAV). The Technical Center's test bed MLS was transported to and collocated with the commissioned Category I Instrument Landing System (ILS) on runway 9R at Tamiami. The flight data collected indicate that the errors in aircraft position, as computed by the MLS RNAV algorithm, consistently met Category I performance criteria, and that computed centerline and glide slope operations can be conducted with Category I accuracies to runways with lateral offsets of up to 3500 feet. (kr)

AN (1) AD-A223 694/XAG

FG (2) 010300

150500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT SAFETY

AND STANDARDS

TI (6) Reliability and Performance of Friction Measuring Tires and Friction Equipment Correlation.

DN (9) Final rept.

AU (10) Morrow, Thomas H.

RD (11) Mar 1990

PG (12) 377 Pages

RS (14) DOT/FAA/AS-90-1

RC (20) Unclassified report

DE (23) *AIRCRAFT TIRES

CORRELATION, FACILITIES, FIELD TESTS, FLIGHT, FRICTION, MEASUREMENT, PAVEMENTS, PERFORMANCE TESTS, RELIABILITY, RUNWAYS, SURFACES, TEST

EQUIPMENT, TIRES, VIRGINIA, WETTING

AB (27) This report contains the description and results of a test program conducted by the Federal Aviation Administration (FAA) at the National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF) located at Wallops Island, Virginia. The field tests were conducted in August 1989. The purpose of the test program was twofold: (1) to establish the reliability, performance and consistency of friction measuring tires used by qualified friction devices; and (2) select the best performing tire(s) for friction equipment correlation for maintenance purposes. Four friction devices were used with their self wetting systems on five types of pavement surfaces. Tests were conducted at speeds of 40 and 60 mph (65 and 95 km/h). A total of 1,643 test runs were conducted, which resulted in 2, 725 data points. 156 regression analyses were performed for the tire performance evaluation and 31 regression analyses for friction equipment correlation. The results showed that the McCreary tire performed best on the Saab Friction Tester (SFT), Runway Friction Tester (RFT) and Skiddometer (SKD). The Dico Tire performed the best on the Mu Meter (MUM). The tire composition given in ASTM E 524 for the McCreary tire will be included in a new ASTM specification that will have the same tire dimensions given in ASTM E 630. The DICO tire will be included in the ASTM E 670 specification. Keywords: Tire performance, Friction equipment, Correlation. (SDW)

AN (1) AD-A225 742/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Repairs to Damage Tolerant Aircraft

AU (10) Swift, T.

RD (11) 22 Mar 1990

PG (12) 25 Pages

RC (20) Unclassified report

NO (21) Presented at the International Symposium on Structural Integrity of Aging Airplanes, Atlanta, GA., 20-22 Mar 90.

DE (23) *AIRFRAMES, *REPAIR, *TRANSPORT AIRCRAFT, *FATIGUE LIFE MATHEMATICAL ANALYSIS, SPLICES, COMPATIBILITY, FASTENINGS, DAMAGE, TOLERANCES(MECHANICS), STRUCTURAL COMPONENTS, LOADS(FORCES),

PEAK

VALUES, CRACKS, DISPLACEMENT, RIVETED JOINTS, AIRCRAFT MAINTENANCE, STRUCTURAL PROPERTIES, STRENGTH(MECHANICS), DEGRADATION, STRESS ANALYSIS, CRACK PROPAGATION, INSPECTION

ID (25) Damage tolerant aircraft, Lap splices, Doublers(repair), Inspectability

AB (27) Results of displacement compatibility analysis, representing a variety of repair doubler and lap splice configurations, are presented to illustrate how structural repairs can degrade the fatigue initiation life and damage tolerance capability of primary transport aircraft structure. Examples show that fatigue initiation life is directly related to the peak loads induced in the first fastener rows at the edges of repair doublers. Design of repairs to an equal or better static strength capability and the associated static strength analysis will not normally highlight these peak loads which can result in considerable degradation of structural fatigue life. Critical fastener loads, based on displacement compatibility analysis accounting for fastener flexibility, are parametrically presented for a variety of skin and doubler thicknesses. Suggestions are made on how repair designs can be modified to improve fatigue initiation life and subsequent fatigue crack detectability particularly in the event of multiple-site damage. The importance of riveting quality during repairs, often not up to initial manufacturing standards, is discussed with respect to fatigue initiation life. A simplified but conservative method to generate crack growth curves is discussed with a view to easing the analytical burden for the small modifiers. It is hoped that this information, together with conservative fatigue Sn data, will help the many small repair and modification stations gain an appreciation of the fatigue and damage tolerance quality of structural repairs.

AN (1) AD-A230 508/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SAFETY

OVERSIGHT

TI (6) Automatic Barometric Updates from Ground-Based Navigational Aids.

DN (9) Final rept.

AU (10) Cox, W. J.

Simpson, Carol

Connor, W. C.

RD (11) 12 Mar 1990

PG (12) 46 Pages

RS (14) DOT/FAA/AOV-90-2

RC (20) Unclassified report

DE (23) AIR TRAFFIC CONTROLLERS, ALTIMETERS, AUTOMATIC, AUTOMATIC TRANSMISSIONS, AVIATION SAFETY, BAROMETRIC PRESSURE, CHANNELS, CIVIL AVIATION, COMMUNICATION AND RADIO SYSTEMS, DIGITAL SYSTEMS, FLIGHT CREWS, GENERAL AVIATION AIRCRAFT, GROUND BASED, HUMAN FACTORS ENGINEERING, INSTRUMENT FLIGHT, NAVIGATIONAL AIDS, PILOTS, REDUCTION, REGULATIONS, REQUIREMENTS, SETTING(ADJUSTING), SYNTHESIS, TRAFFIC, VISUAL FLIGHT RULES, VOICE COMMUNICATIONS, WORKLOAD

AB (27) This study examined techniques for transmitting automatic barometric updates of altimeter settings to pilots from ground-based navigation aids. It also examined the human factors and operational impact of providing automatic altimeter updates to flight crewmembers. The study considered the altimeter setting procedures of general aviation aircraft pilots operating in compliance with the Visual Flight Rules. And, it considered the altimeter setting procedures of pilots operating within the Instrument Flight Rules requirements. The study concludes that there are no insurmountable human factors or operational problems associated with the implementation of ABU, if the technique is based on automatic transmission of the barometric data through synthesized or digitized voice updates from the selected navigation aids. The study also concluded there is potential for improvement of aviation safety by implementing ABU techniques. These improvements would be in the form of: (1) enhancement of the quality of altimeter setting data used by VFR flight crewmembers operating below 18,000 feet MSL, (2) a reduction of workload for flight crewmembers of operating in either VFR or IFR environments, (3) a reduction of air traffic controller workload, and, (4) a small, but positive, reduction of traffic on ATC communication channels. (jhd)

AN (1) AD-A220 312/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS
TI (6) IFR Aircraft Handled Forecast by Air Route Traffic Control Center, Fiscal Years 1990-2005.
RD (11) Feb 1990
PG (12) 70 Pages
RS (14) FAA-APO-90-3
RC (20) Unclassified report
DE (23) *FORECASTING, *INSTRUMENT FLIGHT, *AIR CONTROL CENTERS AERONAUTICS, AIR TRANSPORTATION, AIRCRAFT, BUDGETS, DATA BASES,

ROUTING, MANPOWER, MATHEMATICAL MODELS, AIR TRAFFIC CONTROL SYSTEMS, REGRESSION ANALYSIS

AB (27) This report provides forecasts of Instrument Flight Rule (IFR) aircraft handled by Federal Aviation Administration Air Route Traffic Control Centers. The current study is an update to FAA-AVP 80-4, IFR AIRCRAFT HANDLED Forecast by Air Route Traffic Control Center, Fiscal Years 1980-1991. The forecasts serve as a base for the FAA planning and budget process in determining future requirements for facilities, equipment, and manpower. The forecasts show that total aircraft handled will increase from 37.0 million in FY 1989 to 50.6 million in FY 2005. These national total numbers along with the intervening years are broken down by FAA region and for each air route traffic control center in this report. This appendix contains a technical description of the data sources, methodology, and regression models used in the Instrument Flight Rule (IFR), aircraft activity forecasts for each Air Route Traffic Control Center. Section 2 presents an overview of the forecasting model for IFR aircraft activity. Section 3 provides a detailed description of the various data bases used in the forecasts. Section 4 allocating county data to the various ARTCCs, and estimating models to forecast IFR aviation activity. The final section presents the forecasting models for IFR departures and overs at each ARTCC. Keywords: Air carriers; General aviation; Military aviation; Aircraft operations. (kr)

AN (1) AD-A220 570/XAG
FG (2) 250100
170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Operational Evaluation of Initial Data Link Air Traffic Control Services. Volume 1.
DN (9) Final rept.
AU (10) Talotta, Nicholas J.
RD (11) Feb 1990
PG (12) 67 Pages
RS (14) DOT/FAA/CT-90/1-VOL-1
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DATA LINKS ACCEPTABILITY, AIR TRAFFIC CONTROLLERS, FLIGHT CREWS, METHODOLOGY, OPERATIONAL EFFECTIVENESS, TEST BEDS, TEST METHODS, WORKLOAD
AB (27) This report documents an FAA operational evaluation of the initial

group of four air traffic control services which have been designed for implementation on the Mode S Data Link system. Volume I contains the main body of the report. It includes a detailed description of the objectives of the evaluation and of the technical approach and test methods that were used. In addition, the primary results of the controller and aircrew portions of the study, conclusions, and recommendations are presented. Volume II contains a set of appendixes to the report. The operational evaluation was conducted at the FAA Technical Center using the Data Link test bed. Initial Data Link services were evaluated in order to identify service delivery methods which optimize controller acceptance, performance, and workload. Keywords: Air traffic controllers; Data links. (edc)

AN (1) AD-A221 541/XAG

FG (2) 210400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) In-Flight Evaluations of Turbine Fuel Extenders.

DN (9) Final rept.

AU (10) Ferrara, Augusto M.

RD (11) Feb 1990

PG (12) 37 Pages

RS (14) DOT/FAA/CT-89/33

RC (20) Unclassified report

DE (23) *FUEL CONSUMPTION

AIRCRAFT CABINS, DENSITY, ENERGY, ENGINES, ETHANOLS, FLIGHT TESTING, FUEL LINES, FUEL SYSTEMS, FUELS, INFLIGHT, PARAMETERS, PILOTS, TEST

AND

EVALUATION, THROTTLING, TURBINES

AB (27) Flight tests were conducted which evaluated the use of ethanol as a blending agent for turbine fuels. As part of this study, a Beech King Air 200 was modified to incorporate a cabin tank which contained ethanol, and the fuel system was modified to deliver the ethanol to the starboard engine. Ten percent ethanol was mixed with JP-4 in the project fuel line, just before entering the engine. The test was performed over a broad range of operating conditions, and key performance parameters were measured. The use of ethanol as a blending agent reduced the power available and resulted in an increase in fuel consumption. The increase in fuel consumption was greater than the decrease in energy density. When operating on the ethanol/JP-4 mixtures, the test pilots noted the test engine required more throttle (throttle stagger). Ethanol, Turbine engines, Alternate fuels, Flight tests. (jes)

AN (1) AD-A221 590/XAG

FG (2) 010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Federal Aviation Administration Small Business Innovation Research 5-Year Project Summaries.

DN (9) Final rept. 1985-1989

AU (10) Remer, James H.

RD (11) Feb 1990

PG (12) 102 Pages

RS (14) DOT/FAA/CT-90/5

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *CONTRACT ADMINISTRATION

COMMERCE, CONTRACTS, COSTS, MANAGEMENT INFORMATION SYSTEMS, MONITORS, RESEARCH MANAGEMENT, SHARING

AB (27) This document contains a summary of all Small Business Innovation Research (SBIR) Phase I and Phase II contract awards sponsored, either fully or on a shared cost basis, by the FAA. The research projects contained in this document provide information on each project, including company, principal investigator, contract number, period of performance, FAA technical monitor, and either a summary of the proposed research and anticipated results or a summary of the completed research. This document covers research conducted over a 5-year period from 1985 through 1989. Keywords: Civil aviation; Research management; Contract administration. (edc)

AN (1) AD-A228 554/XAG

FG (2) 170703

250500

120700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational Evaluation of Initial Data Link Air Traffic Control Services. Volume 2. Appendixes.

DN (9) Final rept.

AU (10) Talotta, Nicholas J.

RD (11) Feb 1990

PG (12) 206 Pages

RS (14) DOT/FAA/CT-90/1-VOL-2

RC (20) Unclassified report
NO (21) See also Volume 1, AD-220 570.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DATA LINKS, *DATA PROCESSING
ACCEPTABILITY, AIR TRAFFIC CONTROLLERS, CONTROL, DELIVERY,
OPERATIONAL
EFFECTIVENESS, TEST BEDS, WORKLOAD
AB (27) The results are presented of an evaluation of Initial Data Link Air
Traffic Control (ATC) Services. The Operational Evaluation was
conducted at the Federal Aviation Administration (FAA) Technical Center
utilizing the Data Link test bed. Initial Data Link services were
evaluated in order to identify service delivery methods which optimize
controller acceptance, performance, and workload. Keywords: Air traffic
control systems; Data links; Air traffic controllers. (R.H.)

AN (1) AD-A219 178/XAG
FG (2) 050100
050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Management Assessment: Implications for Development and Training
AU (10) Myers, Jennifer G.
RD (11) Jan 1990
PG (12) 13 Pages
RS (14) DOT/FAA/AM-90/2
RC (20) Unclassified report
DE (23) *JOB SATISFACTION, *MANAGEMENT TRAINING
COMMUNICATION AND RADIO SYSTEMS, FACILITIES, FEMALES,
IDENTIFICATION,
JOBS, LOW STRENGTH, MALES, MANAGEMENT, MANAGEMENT PERSONNEL,
ORGANIZATIONS, PATTERNS, PERCEPTION, RATINGS, REQUIREMENTS,
RESPONSE,
SKILLS, SUPERVISORS, SURVEYS
AB (27) Training needs of first level, middle level, and upper level managers
within the Federal Aviation Administration (FAA) were assessed through
the analysis of two current agency surveys: the biennial Job
Satisfaction Survey and the new, annual Survey-Feedback-Action Program.
Areas of analysis included the identification of areas of strong and
weak performance among managers, comparisons of perceptions of
management at differences levels within an organization, supervisory
skills among managers, differences between ratings of male and female
managers, and the relationship between responses to job context and
management items. Results of the analyses indicated that the relative

weak areas of performance among FAA management were in communication
and performance management. Differences in perceptions of management
among employees at different organizational levels suggested a need for
additional study of potentially dysfunctional communication patterns in
large facilities to enhance development of training in communication
skills. Integration of these results with the study of mid-level
managerial functions and competencies is also necessary for application
to training. The job satisfaction surveys served to provide a first step
toward improved systematization of management development and training
in the FAA. (SDW)

AN (1) AD-A220 313/XAG
FG (2) 170900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Effects of Monitoring under High and Low Taskload on Detection of
Flashing and Colored Radar Targets.
DN (9) Final rept.
AU (10) Thackray, Richard I.
Touchstone, R. M.
RD (11) Jan 1990
PG (12) 17 Pages
RS (14) DOT/FAA/AM-90/3
RC (20) Unclassified report
DE (23) *DETECTION, *POSITION(LOCATION), *RADAR TARGETS, *TARGETS
AIR SPACE, AIR TRAFFIC CONTROL SYSTEMS, AIRCRAFT, ATTENTION,
AVIATION
ACCIDENTS, COLORS, CONFLICT, CONTROL, DISPLAY SYSTEMS, FATIGUE,
INTRUSION, LIGHTWEIGHT, MONITORING, SENSITIVITY, SHAPE, SIGNALS,
TOUCH,
VIGILANCE, WARNING SYSTEMS
AB (27) While midair collisions between aircraft are extremely rare
occurrences, 'near midair' incidents are more common. The present study
sought to evaluate the gains in conspicuity that might be realized if
flashing or color were added as redundant cues to indicate the presence
of unexpected, nontracked aircraft entering controlled airspace and to
examine the extent to which increased taskload and fatigue might
influence the expected gains. Sixty-four subjects monitored a simulated
air traffic control task over a 2-hour period for possible conflict
situations (their primary task) under either high or low primary
taskload conditions. They also monitored for occasional intrusions by
light aircraft identifiable on the basis of target shape alone or with

color and/or flashing added as redundant cues. Flashing as a redundant cue was found to be superior to color in all aspects tested; unlike color, detection of flashing targets was unaffected by screen location and by changes in primary taskload. Flashing was also least affected by monitoring fatigue. It was concluded that the superiority of flashing over color in attracting attention to objects in a display must be weighed against its possible potential for distraction. A practical means of accomplishing this in operational situations is through the use of touch sensitive displays to both acknowledge/confirm target location and to deactivate flashing. Air traffic control, Attention, Color, Flashing, Monitoring, Performance, Vigilance, Warning signals. (eg)

AN (1) AD-A221 414/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Index of FAA Office of Aviation Medicine Reports: 1961 through 1989.

DN (9) Final rept.

AU (10) Collins, William E.
Wayda, Michael E.

Baxter, Nancy E.

RD (11) Jan 1990

PG (12) 61 Pages

RS (14) DOT/FAA/AM-90/1

RC (20) Unclassified report

DE (23) *AVIATION MEDICINE, *REPORTS
INDEXES

AB (27) An index to Office of Aviation Medicine Reports (1964-1989) and Civil Aeromedical Research Institute Reports (1961-1963) is presented as a reference for those engaged in aviation medicine and related activities. It lists all FAA aviation medicine reports published from 1961 through 1989: chronologically (pp. 1-32), alphabetically by author (pp. 33-38), and alphabetically by subject (pp. 39-55). Keywords: Aviation medicine; Research reports; Office of Aviation Medicine. (kt)

AN (1) AD-A237 309/XAG

FG (2) 010500

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR

FOR AIR PORTS

TI (6) Accomplishments under the Airport Improvement Program: Fiscal Year 1990.

DN (9) Annual rept. no. 9

AU (10) Hetsko, Jean

RD (11) 1990

PG (12) 107 Pages

RS (14) DOT/FAA/ARP-91-1

RC (20) Unclassified report

DE (23) AERONAUTICS, AIR TRAFFIC, AIRPORTS, APPROACH LIGHTS, CAPACITY(QUANTITY), CARGO, COMMERCIAL AVIATION, CONSTRUCTION, FACILITIES, FRICTION, GROOVING, GROWTH(GENERAL), GUIDANCE,

HELIPORTS,

NATIONAL DEFENSE, NAVIGATIONAL AIDS, OPERATION, PASSENGERS,

POLICIES,

POSTAL SERVICE, PRECISION, RUNWAYS, SAFETY, VERTICAL ORIENTATION,

VISUAL PERCEPTION

ID (25) AIP(Airport Improvement Program), *Airports, *Air transportation, *Management planning and control, *Aviation safety, Civil aviation, Annual reports, Noise pollution

AB (27) The Airport and Airway Improvement Act of 1982 requires that the Secretary of Transportation submit an annual report to Congress describing the accomplishments of the Airport grant program. This report covers activities for the fiscal year ending September 30, 1990.

A 'Declaration of Policy' section includes the following: Safe operation of the airport and airway system will be given highest aviation priority; Continuation of airport and airway improvement programs and airports are required to meet current and projected growth of aviation and requirements of interstate commercial aviation, postal service, and national defense; Provision of adequate navigation aids and airport facilities, including reliever airports and reliever heliports; Installation, operation and maintenance of precision approach systems, vertical visual guidance systems, approach light systems for primary runways and grooving or friction treatment of runways; and Airport construction and improvement projects which increase capacity of facilities to accommodate passenger and cargo air traffic.

AN (1) AD-A240 287/XAG

FG (2) 050900

010600

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) U.S. Civil Airmen Statistics: Calendar Year 1990.

RD (11) 1990

PG (12) 36 Pages

RC (20) Unclassified report

DE (23) AERONAUTICS, AIR FORCE PERSONNEL, AVIATION PERSONNEL, CIVIL AVIATION,

FLIGHT, GLIDERS, GROUND LEVEL, INDUSTRIES, INSTRUCTORS, MEDICAL EXAMINATION, MEDICINE, NAVIGATORS, OKLAHOMA, PILOTS, RECORDS, STATISTICS, URBAN AREAS

ID (25) *Pilots, *Flight crews, *Qualifications, *Statistical data, *Tables(Data), *Civil aviation

AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certificate records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active Airmen is one who holds both an airmen certificate and a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots; glider, flight navigators, and lighter-than-air pilots are not required to have a medical examination but the numbers represent only those who had a valid medical certificate. Mechanics, Parachute riggers, ground instructors, and dispatchers certificates represent all certificates on record at the Aeronautical Center.

AN (1) AD-A240 529/XAG

FG (2) 050500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Criminal Acts against Civil Aviation: 1990.

RD (11) 1990

PG (12) 44 Pages

RC (20) Unclassified report

DE (23) BOMBING, CIVIL AVIATION

ID (25) *Criminal investigations, *Civil aviation, Criminal acts, Hijacking

AB (27) This report is an overview of criminal acts, including hijackings, bombings, attempted bombings, and other assaults, that occurred against

civil aviation interests worldwide during 1990.

AN (1) AD-A241 483/XAG

FG (2) 010309

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airport Activity Statistics of Certificated Route Air Carriers: Calendar Year 1990.

DN (9) Rept. for period ending 31 Dec 90.

RD (11) 1990

PG (12) 544 Pages

RC (20) Unclassified report

DE (23) *COMMERCIAL AVIATION

AIRCRAFT LANDINGS, PASSENGER AIRCRAFT, CARGO

ID (25) Aircraft departures, Aircraft passengers, Mail transport

AB (27) This report contains summary tables regarding: Summary of aircraft departures, enplaned revenue passengers, and enplaned revenue tons of cargo and mail by type of service, by carrier group, and by air carrier; Summary of aircraft departures, enplaned passengers, and enplaned revenue tons of cargo and mail by type of service, by state and U.S. Area; Aircraft departures, enplaned revenue passengers, and enplaned revenue tons of cargo and mail in total operations, all services at large air traffic hubs; Aircraft departures, enplaned revenue passengers, and enplaned revenue tons of cargo and mail in total operations, all services at medium air traffic hubs; Aircraft departures, enplaned revenue passengers, and enplaned revenue tons of cargo and mail in total operations, all services at small air traffic hubs. It contains detailed tables regarding: Enplaned revenue passengers, enplaned tons of cargo and mail, and air traffic hub classifications, by type of service, by community, and by carrier; and Aircraft departures scheduled and aircraft departures performed, by aircraft type, by community, and by carrier.

AN (1) AD-A241 484/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) FAA Air Traffic Activity: FY 1990. Addendum.

DN (9) Statistical rept. 1 Oct 89-30 Sep 90.

RD (11) 1990

PG (12) 217 Pages

RC (20) Unclassified report

DE (23) AIR TRAFFIC, CONTROL CENTERS, FLIGHT, STATIONS

ID (25) *Air traffic control terminal areas, *Airport control towers, Airport operations, Instrument operations, Aircraft handled, Instrument approaches, Total flight services

AB (27) This FAA publication furnishes terminal and en route air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs/AFSSs/IFSSs), Approach Control Facilities, and FAA contract-operated towers. These reports are used as a guide in determining the need for larger or additional facilities and possible increases in personnel at existing facilities.

AN (1) AD-A249 128/XAG
FG (2) 010600
010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) FAA Statistical Handbook of Aviation: Calendar Year 1990.
DN (9) Annual rept.
RD (11) 1990
PG (12) 132 Pages
RC (20) Unclassified report
DE (23) *CIVIL AVIATION, *STATISTICAL DATA
AIR TRAFFIC, AIRPORTS, AVIATION ACCIDENTS, GENERAL AVIATION AIRCRAFT, MANAGEMENT

ID (25) Aeronautical productions, *Federal aviation administratio, *National airspace system

AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production and Imports/Exports, and a Glossary of the terms used in this publication. Air carrier, Airport, Air traffic, Airmen, Aircraft accidents, General aviation, Aeronautical production.

AN (1) AD-A215 718/XAG
FG (2) 250500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Data Link Processor (DLP) Operational Test and Evaluation/Integration Test Plan.
DN (9) Technical note
AU (10) Watts, Norman W.

Doucett, Noel A.
RD (11) Dec 1989
PG (12) 63 Pages
RS (14) DOT/FAA/CT-TN89/32
RC (20) Unclassified report
DE (23) *DATA LINKS, *DATA PROCESSING EQUIPMENT, *DIGITAL SYSTEMS, *INTEGRATION
AERONAUTICS, AIRCRAFT, ALLOCATIONS, AVIATION SAFETY, BEACONS, DATA BASES, EFFICIENCY, FLIGHT, FORECASTING, HAZARDS, METEOROLOGICAL DATA,
OPERATIONAL EFFECTIVENESS, PILOTS, PLANNING, RADAR, REPORTS, RESOURCE
MANAGEMENT, SURFACES, TEST AND EVALUATION, TEST METHODS, WEATHER

AB (27) The provision for two-way communication with aircraft, via a digital data link, has long been considered a means of providing significant enhancements for safe and efficient flight operations. The Data Link Processor (DLP) being tested will initially perform the ground-based data link processing functions necessary to provide appropriately equipped aircraft with pilot requested aviation weather data from a National Weather Data Base via the Mode Select Beacon System (Mode S). The weather data base will contain six products: Surface Observations (SA), Terminal Forecasts (FT), Pilot Reports (UA), Wind and Temperature Aloft Forecasts (FD), Radar Summaries (SD), and Hazardous Weather Advisories. The DLP Operational Test and Evaluation/Integration Test Plan depicts all systems that interface with the DLP, and identifies the data that will be communicated between them. This plan sets forth and defines the philosophy, approach, methods, organization, and schedules for the verification of the DLP requirements. This plan provides sufficient detail to define and direct the development of detailed test procedures and to identify the allocation of resources required to support those tests. (RRH)

AN (1) AD-A218 393/XAG
FG (2) 010300
010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) The Influence of Adjacent Seating Configurations on Egress through a Type III Emergency Exit.
DN (9) Final rept.
AU (10) Rasmussen, Paul G.

Chittum, Charles B.
RD (11) Dec 1989
PG (12) 22 Pages
RS (14) DOT/FAA/AM-89/14
RC (20) Unclassified report
DE (23) *AERONAUTICS, *CONFIGURATIONS, *EMERGENCIES, *AIRCRAFT, *EXITS, *SEATS
EVACUATION, FLOW RATE, GREAT BRITAIN, PASSENGERS, PREPARATION, REGULATIONS, SAFETY, SEATS, TIME, UNITED STATES GOVERNMENT, AERONAUTICS, CONFIGURATIONS, EMERGENCIES, EVACUATION, EXITS, FLOW RATE,
GREAT BRITAIN, PASSENGERS, PREPARATION, REGULATIONS, SAFETY, TIME, UNITED STATES GOVERNMENT
AB (27) When the United Kingdom Civil Aviation Authority (CAA) established a mandatory action intended to improve access to, and opening of, Type III emergency exits, the Northwest Mountain Region identified a need for a study to evaluate the proposed changes against existing minimum requirements of the Federal Aviation Regulations (FAR). The results indicate that the proposed CAA configuration and the alternative configuration were both more effective than the minimum configuration required by the FARs as measured by evacuation flow rate. There were no significant differences in the exit preparation time among the four seating arrangements. Emergency evacuation; Emergency exit; Passenger safety; Seating configurations; Great Britain; England. (eg)

AN (1) AD-A220 494/XAG
FG (2) 131200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Fire Hazards of Aerosol Cans in Aircraft Cargo Compartments.
DN (9) Final rept.
AU (10) Blake, David R.
RD (11) Dec 1989
PG (12) 24 Pages
RS (14) DOT/FAA/CT-89/32
RC (20) Unclassified report
NO (21) Original contains color plates: All DTIC and NTIS reproductions will be in black and white.
DE (23) *AEROSOLS, *CARGO, *FIRE HAZARDS
AIRCRAFT, BAGS, BUTANES, COMPARTMENTS, CONTAINERS, CONTROL, DAMAGE,
EXPOSURE(GENERAL), FIRE SAFETY, FIRES, FLAMMABILITY, GASES, HAZARDS, HIGH TEMPERATURE, HYDROCARBONS, MEDICINE, PROPANE, PROPELLANTS,

SIMULATION, TEST AND EVALUATION, THREATS, TIME, TOILET ARTICLES, TRANSPORT AIRCRAFT
ID (25) *Aerosol Containers, *Aerosol Cans, *Pressurized Containers
AB (27) The purpose of this project was to determine the hazards associated with aerosol cans involved in cargo fires. Over the last several years the chlorofluorocarbon propellant used in aerosol cans has been replaced with hydrocarbons such as butane, propane, and isobutane. These flammable gases would normally be prohibited on passenger carrying airplanes but there is an exception for up to 75 ounces per person for medicinal and toilet articles when carried in checked baggage only. Seven fire tests involving aerosol cans were conducted in an 800-cubic-foot cargo compartment. The main conclusions of the study were that hydrocarbon propellants in aerosol cans increase the damage potential of luggage fires; the fires in a simulated Class D compartment where aerosol cans ruptured and ignited were not contained; a Class C compartment provides significantly more protection against aerosol can fire threat than does a Class D compartment; an aerosol can rupturing and igniting in a class D or Class C cargo compartment would eliminate the compartments ability to control ventilations and drafts; and aerosol cans would be exposed to elevated temperatures for a longer period of time in a luggage fire in a Class D compartment than in a Class C compartment. Keywords: Aerosol cans; Fire safety; Cargo fires; Flammable gases. (kt)

AN (1) AD-A233 156/XAG
FG (2) 240100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Airliner Cabin Ozone: An Updated Review.
DN (9) Final rept.
AU (10) Melton, C. E.
RD (11) Dec 1989
PG (12) 19 Pages
RS (14) DOT/FAA/AM-89/13
RC (20) Unclassified report
DE (23) ADVERSE CONDITIONS, CAPACITY(QUANTITY), CONTAMINATION, DESTRUCTION,
DISEASES, HEART, IRRITATION, LISTERIA, LUNG, MICE, OZONE, PATIENTS, RESPIRATORY SYSTEM, SURVIVAL(GENERAL), TIME
ID (25) *Ozone, *Air pollutant, Oxidants, Air quality, Atmospheric contamination, Aviation environment
AB (27) The recent literature pertaining to ozone contamination of airliner

cabins is reviewed. Measurements in airliner cabins without filters showed that ozone levels were about 50 percent of atmospheric ozone. Filters were about 90 percent effective in destroying ozone. Ozone (0.12 to 0.14 ppmv) caused mild subjective respiratory irritation in exercising men, but 0.20 to 0.30 ppmv did not have adverse effects on patients with chronic heart or lung disease. Ozone (1.0 to 2.0 ppmv) decreased survival time of influenza-infected rats and mice and suppressed the capacity of lung macrophages to destroy *Listeria*. Airway responses to ozone are divided into an early parasympathetically mediated bronchoconstrictive phase and a later histamine-mediated congestive phase.

AN (1) AD-A235 887/XAG

**FG (2) 010309
150300**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Recurring rept. 1 Jul-31 Dec 89.

RD (11) 31 Dec 1989

PG (12) 30 Pages

RS (14) DOT/FAA/ACS-89-1(31)

RC (20) Unclassified report

DE (23) AIRCRAFT HIJACKING, BOMBS, CIVIL AVIATION, COMMERCIAL AVIATION, CRIMES,

PASSENGERS, SABOTAGE, SECURITY, THREATS

ID (25) *Civil Aviation Security Program, Hijacking, Terrorism, Explosives, Passenger aircraft, *Passenger screening, *Area security, Security procedures, Hazardous materials

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking, attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program.

AN (1) AD-A215 964/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Parallel Approach Separation and Controller Performance.

DN (9) Technical note

AU (10) Stein, Earl S.

RD (11) Nov 1989

PG (12) 98 Pages

RS (14) DOT/FAA/CT-TN89/50

RC (20) Unclassified report

DE (23) *AIRCRAFT LANDINGS, *TIME STUDIES, *SEPARATION AIR SPACE, AIRCRAFT, AIRPORTS, CAPACITY(QUANTITY), CONTROL, ESTIMATES, FREQUENCY, OBSERVERS, OPERATORS(PERSONNEL), PARALLEL ORIENTATION, PERFORMANCE(HUMAN), REDUCTION, RUNWAYS, AVIATION SAFETY, APPROACH, SIMULATION, STANDARDS, VARIABLES, WORKLOAD

AB (27) This report describes a small sample study of the possible impact of altering the separation minimum between aircraft approaches to dependent parallel runways. The current standard is 2 nautical miles (nmi) and the proposed new standard is 1.5 nmi. Four full performance level air traffic controllers participated in 12 hours of simulated air traffic control activity in which separation standards were altered in a balanced fashion after each 1 hour block of simulation. Data were collected on multiple airspace and operator performance variables. Also collected were workload and observer estimates. The goal was to determine if system performance could be improved without compromising safety. Results indicated an increased frequency of landings using the 1.5 nmi standard indicating a finite increase in airport capacity. There were no indications of reduced safety or increased operator workload. Since the data were generated based on a small sample, results should be considered indicative rather than conclusive. (kr)

AN (1) AD-A216 294/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Dallas/Fort Worth Simulation. Volume 1.

DN (9) Technical note

AU (10) Hitchcock, Lloyd

Paul, Lee E.

Shochet, Ephraim

Algeo, Richard D.

RD (11) Nov 1989

PG (12) 124 Pages

RS (14) DOT/FAA/CT-TN89/28-VOL-1

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COMPUTERIZED SIMULATION ARRIVAL, CONFIGURATIONS, CONTROL, FLOW, MANAGEMENT, PARALLEL ORIENTATION, PATTERNS, PLANNING, RUNWAYS, SAFETY, REAL TIME, TEXAS, SYNCHRONISM, TOOLS, TRAFFIC, TURBOPROP ENGINES, VALUE

ID (25) Dallas/Fort Worth(Texas)

AB (27) At the request of the Director, Southwest Region, the Technical Center conducted a series of dynamic, real-time, air traffic control simulations of selected aspects of the D/FW Metroplex Air Traffic System Plan. Using D/FW controllers as subjects, the simulations provided an opportunity evaluate proposed changes in area flow patterns and traffic management and to experience simultaneous approaches to the four parallel runway configuration under consideration for D/FW. The results of these simulations demonstrated that, even when faced with up to twice their normal traffic load, the controllers could maintain a smooth and safe flow of traffic using the new configurations proposed for the D/FW area. The D/FW Evaluation Team declared that the parallel arrival routes, separate altitudes for high performance turboprops, increased departure routes, and stratified sectors all proved to be valuable controller tools. In addition, simulation of the four simultaneous parallel approaches led the Evaluation Team to enthusiastically endorse the concept of four simultaneous approaches to the D/FW airport and to affirm that in each and every case the concept proved to be safe even though frequently challenged by the unlikely conditions of 30 degree blunders without communications. (kr)

AN (1) AD-A216 296/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Atlanta Tower Simulation. Volume 1.

DN (9) Technical note

AU (10) Hitchcock, Lloyd

Paul, Lee E.

Shochet, Ehpraim

Algeo, Richard D.

RD (11) Nov 1989

PG (12) 82 Pages

RS (14) DOT/FAA/CT-TN89/27-VOL-1

RC (20) Unclassified report

DE (23) *COMPUTERIZED SIMULATION

AIRPORTS, CLOSURES, COMMUNICATION AND RADIO SYSTEMS, CONFIGURATIONS,

CONSTRUCTION, DYNAMICS, FLOW, HORIZONTAL ORIENTATION, LOSSES, NAVIGATION, OPTIMIZATION, PARALLEL ORIENTATION, PLANNING, RADAR, RANGE(DISTANCE), REAL TIME, RUNWAYS, SEPARATION, TOWERS, TRAFFIC

ID (25) *Atlanta(Georgia), *Aircraft Control Towers

AB (27) At the request of the Atlanta (ATL) Facility, The Technical Center conducted dynamic real-time simulations of selected aspects of the Atlanta Tower's Airport Enhancement Plan. Atlanta controllers, who served as subjects, evaluated traffic flow to a three runway configuration with both a third parallel runway, 3000 feet south of existing runway 9R and a 30 degree converging runway. Large numbers of blunders (deviations of inbound aircraft away from their assigned localizer paths) were introduced to exercise the proposed system. In over 90 blunders during approaches to the third parallel runway, 5 resulted in closure distances between aircraft small enough to merit detailed analysis. The smallest horizontal distance involved 30 degree blunders across the 3000-foot separation with four of these also simulating a complete loss of communications. The overall simulation results demonstrated the controllers' ability to maintain an orderly flow of traffic to both the triple parallel and converging runway configurations. When repeatedly challenged by the unlikely combination of 30 degree NORDO blunders, 94 percent of were managed without incident. The decision on runway separation distances for new construction or runways in Atlanta should not be based solely on the results of this simulation. Additional relevant data is now available which could affect the results, including navigation data from Chicago O'Hare, and automation and radar data being collected at Memphis, Tenn. and Raleigh-Durham, N.C. (kr)

AN (1) AD-A216 613/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Dallas/Fort Worth Simulation. Volume 2. Appendixes D,E, and F.

DN (9) Technical note

AU (10) Hitchcock, Lloyd

Paul, Lee E.

Shocket, Ephraim

Algeo, Richard D.

RD (11) Nov 1989

PG (12) 289 Pages

RS (14) DOT/FAA/CT-TN89/28-VOL-2

RC (20) Unclassified report
NO (21) See also Volume 1, AD-A216 294.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *SIMULATION
ARRIVAL, CONFIGURATIONS, FLOW, MANAGEMENT, PARALLEL ORIENTATION,
PATTERNS, PLANNING, RUNWAYS, SAFETY, SYNCHRONISM, TRAFFIC,
TURBOPROP
ENGINES

AB (27) At the request of the Director, Southwest Region, the Technical Center conducted a series of dynamic, real-time, air traffic control simulations of selected aspects of the D/FW Metroplex Air Traffic System Plan. Using D/FW controllers as subjects, the simulations provided an opportunity evaluate proposed changes in area flow patterns and traffic management and to experience simultaneous approaches to the four parallel runway configuration under consideration for D/FW. The results of these simulations demonstrated that, even when faced with up to twice their normal traffic load, the controllers could maintain a smooth and safe flow of traffic using the new configurations proposed for the D/FW area. The D/FW Evaluation Team declared that the 'parallel arrival routes, separate altitudes for high performance turboprops, increased departure routes, and stratified sectors all proved to be valuable controller tools.' In addition, simulation of the four simultaneous parallel approaches led to the Evaluation Team to 'enthusiastically endorse the concept of four simultaneous approaches to the D/FW airport' and to affirm that 'in each and every case the concept proved to be safe' even though frequently challenged by the unlikely conditions of 30 degree blunders without communications. (rrh)

AN (1) AD-A216 680/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Atlanta Tower Simulation. Volume 2. Appendixes.
DN (9) Technical note
AU (10) Hitchcock, Lloyd
Paul, Lee E.
Shochet, Ephraim
Algeo, Richard D.
RD (11) Nov 1989
PG (12) 266 Pages
RS (14) DOT/FAA/CT-TN89/27-VOL-2
RC (20) Unclassified report
DE (23) *CONFIGURATIONS, *RUNWAYS, *SIMULATION, *TOWERS
AIRCRAFT, AIRPORTS, CLOSURES, COMMUNICATION AND RADIO SYSTEMS,

CONSTRUCTION, DYNAMICS, FLOW, HORIZONTAL ORIENTATION, LOSSES,
NAVIGATION, OPTIMIZATION, PARALLEL ORIENTATION, PLANNING, RADAR,
RANGE(DISTANCE), REAL TIME, SEPARATION, TRAFFIC
AB (27) At the request of the Atlanta (ATL) Facility, The Technical Center conducted dynamic real-time simulations of selected aspects of the Atlanta Tower's Airport Enhancement Plan. Atlanta controllers, who served as subjects, evaluated traffic flow to a three runway configuration with both a third parallel runway, 3000 feet south of existing runway 9R and a 30 degree converging runway. Large numbers of blunders (deviations of inbound aircraft away from their assigned localizer paths) were introduced to exercise the proposed system. In over 90 blunders during approaches to the third parallel runway, 5 resulted in closure distances between aircraft small enough to merit detailed analysis. The smallest horizontal distance involved 30 degree blunders across the 3000-foot separation with four of these also simulating a complete loss of communications. The overall simulation results demonstrated the controller's ability to maintain an orderly flow of traffic to both the triple parallel and converging runway configurations. When repeatedly challenged by the unlikely combination of 30 degree NORDO blunders, 94 percent of were managed without incident. The decision on runway separation distances for new construction or runways in Atlanta should not be based solely on the results of this simulation. Additional relevant data is now available which could affect the results, including navigation data from Chicago O'Hare, and automation and radar data being collected at Memphis, Tenn, and Raleigh-Durham, N.C. (rrh)

AN (1) AD-A216 798/XAG
FG (2) 010600
230400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) The Effects of Wearing Passenger Protective Breathing Equipment on
Evacuation Times through Type III and Type IV Emergency Aircraft Exits
in Clear Air and Smoke. Phase 1. Evacuations in Clear Air. Phase 2.
Evacuations in Smoke.
DN (9) Final rept.
AU (10) McLean, Garnet A.
Higgins, E. A.
Lyne, Peggy J.
Vant, James H.
RD (11) Nov 1989

PG (12) 33 Pages
RS (14) DOT/FAA/AM-89/12
RC (20) Unclassified report
DE (23) *BREATHING APPARATUS, *EVACUATION, *EXITS
AIR, AIRCRAFT, CONTROL, EMERGENCIES, ERGONOMICS, FACTOR ANALYSIS,
HATCHES, ISOLATION, LEARNING, OPENINGS, PASSENGERS, PROTECTIVE
EQUIPMENT, SIZES(DIMENSIONS), SMOKE, TIME, TOUCH, VISIBILITY
ID (25) PPBE(Passenger Protective Breathing Equipment), Aircraft passengers
AB (27) The effects of Passenger Protective Breathing Equipment (PPBE) on the
time required for simulated emergency evacuations through Type III and
Type IV overwing aircraft exits were studied in two quasi-independent
experiments, one in clear air and another in smoke. Two different types
of PPBE, the Dupont PELS and the Sabre Industries Sabre, were used in
both experiments. Eight groups of 20 subjects participated in each
experiment; each group of subjects evacuated with/without PPBE. The
order of PPBE presentation condition was counterbalanced to allow
analysis of evacuation experience, i.e., learning. The results obtained
supported the conclusion that exit hatch opening size was the most
important factor in determining the time required to evacuate through
these exits, followed next by the effects of smoke, and finally by the
wearing of PPBE. It was further concluded that because the PPBE effects
were isolated to the time required to cross the exit hatch opening, the
effects of PPBE were actually dependent on exit hatch opening size. The
effects of smoke were seen to result from the necessity of using
tactile information to control egress in the impoverished visual
environment afforded subjects. These results were discussed in relation
to passenger ergonomics and aircraft design. (edc)

AN (1) AD-A216 799/XAG

FG (2) 230400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Evaluation of the Scott Aviation Portable Protective Breathing Device
for Contaminant Leakage as Prescribed by FAA Action Notice A-8150.2.
Phase 1. Original Tests of the Portable Protective Breathing Device.
Phase 2. Tests of the Redesigned Portable Protective Breathing Device

AU (10) Higgins, E. A.
McLean, Garnet A.
Lyne, Peggy J.
Funkhouser, Gordon E.
Young, Joseph W

RD (11) Nov 1989

PG (12) 34 Pages
RS (14) DOT/FAA/AM-89-11
RC (20) Unclassified report
DE (23) *BREATHING APPARATUS, *CARBON DIOXIDE, *EXHALATION, *INHALATION,
*OXYGEN, *RESPIRATION
CONCENTRATION(COMPOSITION), CONTAMINANTS, CREWS, GROUND LEVEL,
MATERIALS, NECK(ANATOMY), NEW YORK, OPENING(PROCESS),
PERFORMANCE
TESTS, PORTABLE EQUIPMENT, PRESSURE, SEALS(STOPPERS),
SIZES(DIMENSIONS), TEST AND EVALUATION
AB (27) At the request of Scott Aviation, performance tests of the crew
portable protective breathing (CPBE) device (PN-802300-11) were
conducted at ground level and 8,000 ft. altitude. The first tests at
ground level measured contaminant leakage, oxygen and carbon dioxide
levels, inhalation/exhalation pressures and internal/external dry-bulb
temperatures; replications at 8,000 ft. were performed for all the
variables except contaminant leakage. For ten male subjects, the device
proved satisfactory for all measures tested; compliance with A-8150.2
could be established for internal CPBE temperature since no wet-bulb
values were obtained. Devices were also tested on nine female subjects;
the findings were successful for all measures except contaminant
leakage. A new set of tests, approved by the FAA Certification Office
in New York, was conducted after changes in neck seal material and
opening size were made by Scott Aviation, using only 1 male and 5
females with small neck circumferences (11.81 to 13.07 ins.) and 1 male
with a large neck size (16.62 ins.). These tests proved successful for
all but two devices on subjects with unusually protruding larynxes, for
which a further reduction in neck seal opening size afforded adequate
protection for these individuals, as well as an acceptable comfort
level for a large individual. It is concluded that the Scott CPBE
device with a 1/16 in thick neoprene foam neck seal, having a 2.5 in.
diameter opening, performs as required by FAA Action Notice A-8150.2
for the parameters measured. (RRH)

AN (1) AD-A220 512/XAG

FG (2) 040200
010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ADVANCED
SYSTEM DESIGN
SERVICE

TI (6) Windshear Case Study: Denver, Colorado, July 11, 1988.

DN (9) Final rept.

AU (10) Schlickemaier, Herbert W.

RD (11) Nov 1989
PG (12) 514 Pages
RS (14) DOT/FAA/DS-89/19
RC (20) Unclassified report
DE (23) *DOPPLER RADAR, *METEOROLOGICAL RADAR, *WIND SHEAR
AIR TRAFFIC CONTROL SYSTEMS, AIR TRAFFIC CONTROL TERMINAL AREAS,
AIRCRAFT LANDINGS, COMMERCIAL AIRCRAFT, AIRPORTS, ALGORITHMS,
APPROACH,
AVIATION SAFETY, CASE STUDIES, COLORADO, DATA PROCESSING
EQUIPMENT,
FLIGHT CREWS, FLIGHT RECORDERS, AIR FLOW, OPERATION, PASSENGER
AIRCRAFT, RUNWAYS, SEARCH RADAR, SIMULATION, TERMINAL FLIGHT
FACILITIES, TEST AND EVALUATION, FLIGHT TRAINING, TRAINING DEVICES,
WARNING SYSTEMS
ID (25) LLWAS(Low Level Wind Shear Alert System), Divergent flow, TDWR(Terminal
Doppler Weather Radar)
AB (27) On July 11, 1988, between 2207 and 2213 UTC (16:07-16:13 MDT), four
successive United flights had inadvertent encounters with microburst
windshear conditions while on final approach to Denver Stapleton
Airport, each resulting in a missed approach, but uneventful arrival. A
fifth flight executed a missed approach without encountering the
phenomena. All of the flight crews were trained to use the resources of
the Windshear Training Aid. There was no damage to aircraft and no
passenger injuries. At the time the aircraft encountered the
microburst, the Terminal Doppler Weather Radar (TDWR) operations test
and experiment was in progress and detected divergent flow that
intersected the operating zones for the approach runways. The radar
used to test the TDWR algorithm was the MIT Lincoln Lab.10 cm Doppler
radar. This study outlines the technical details of the encounter, as
well as describes insights gained from this confrontation that should
be applied to future investigations of aircraft encountering windshear.
Information from several sources includes flight crew comments, air
traffic control operations and surveillance radar data, flight data
recorders, data from the TDWR and the Low-Level Wind Shear Alert System
(LLWAS), technical details of the event meteorology, and data from the
Terminal Area Simulation System (TASS). Aviation safety. (edc)

AN (1) AD-A214 091/XAG
FG (2) 120600
120500
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC
CITY NJ

TI (6) Aircraft Reply and Interference Environment Simulator (ARIES) Hardware
Principles of Operation. Volume 2. Appendixes.

DN (9) Technical note
AU (10) Mancus, Edward
RD (11) Oct 1989
PG (12) 132 Pages
RS (14) DOT/FAA/CT-TN88/4-VOL-2
RC (20) Unclassified report
DE (23) *FLIGHT SIMULATORS, *RADAR BEACONS, *COMPUTER PROGRAMS
AIRCRAFT, ALIGNMENT, DETECTORS, DIGITAL SYSTEMS, DISKS,
ENVIRONMENTS,
FILES(RECORDS), INTERFERENCE, MAINTENANCE, MANUALS, MODELS,
OPERATION,
RADIOFREQUENCY, RECEIVERS, SIMULATION, SIMULATORS, TRAFFIC,
UPLINKS,
USER MANUALS

ID (25) ARIES(Aircraft Reply and Interference Environment Simulator)
AB (27) The Aircraft Reply and Interference Environment Simulator (ARIES) makes
possible the performance assessment of the Mode Select (Mode S) sensor
under its specific maximum aircraft load. To do this, ARIES operates
upon disk files for traffic model and interference to generate
simulated aircraft replies and fruit, feeding them to the sensor at
radio frequency. Support documentation for ARIES consists of: ARIES
Hardware Maintenance Manual: Volume I (DOT/FAA/CT-TN88/3); Appendixes
of the Hardware Maintenance Manual: Volume II; ARIES Hardware
Principles of Operation: Volume I (DOT/FAA/CT-TN88/4); Appendixes of
the Hardware Principles of Operation: Volume II; ARIES Software
Principles of Operation (DOT/FAA/CT-TN87/16); ARIES Software User's
Manual (DOT/FAA/CT-TN88/15). The Appendixes to the Hardware Principles
of Operation provides (1) the acronyms and abbreviations used within
the document, (2) detailed information covering the development and
implementation of controller microcode, and (3) Uplink Receiver digital
alignment. (KR)

AN (1) AD-A214 092/XAG

FG (2) 120600
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Aircraft Reply and Interference Environment Simulator (ARIES) Hardware
Principles of Operation. Volume 1

AU (10) Mancus, Edward
RD (11) Oct 1989

PG (12) 276 Pages
RS (14) DOT/FAA/CT-TN88/4-VOL-1
RC (20) Unclassified report
DE (23) *FLIGHT SIMULATORS, *COMPUTERS, *RADAR BEACONS
AIRCRAFT, COMPUTER PROGRAMS, DETECTORS, DIAGRAMS, DISKS,
ENVIRONMENTS,
FILES(RECORDS), FLOW CHARTING, INTERFERENCE, MAINTENANCE,
MANUALS,
MODELS, OPERATION, RADIOFREQUENCY, SIGNALS, SIMULATION,
SIMULATORS,
TARGETS, THEORY, TIME, TRAFFIC, USER MANUALS
ID (25) ARIES(Aircraft Reply and Interference Environment Simulator)
AB (27) The Aircraft Reply and Interference Environment Simulator (ARIES) makes
possible the performance assessment of the Mode Select (Mode S) sensor
under its specific maximum aircraft load. To do this, ARIES operates
upon disk files for traffic model and interference to generate
simulated aircraft replies and fruit, feeding them to the sensor at
radio frequency. Support documentation for ARIES consists of: ARIES
Hardware Maintenance Manual: Volume I(DOT/FAA/CT-TN88/3); Appendixes of
the Hardware Maintenance Manual: Volume II; ARIES Hardware Principles
of Operation: Volume I (DOT/FAA/CT-TN88/4-I); Appendixes of the
Hardware Principles of Operation: Volume II; ARIES Software Principles
of Operation (DOT/FAA/CT-TN87/16); ARIES Software User's Manual
(DOT/FAA/CT-TN88/15). This document, the ARIES Hardware Principles of
Operation, Volume I, explains the theory of operation of the ARIES
special purpose hardware designed and fabricated at the Federal
Aviation Administration Technical Center. Each hardware device is
discussed. Functional block diagrams, signal timing diagrams, and state
timing diagrams are included where appropriate. Keywords: Stand alone
target simulation; Radar beacons. (KR)

AN (1) AD-A217 412/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Analysis of Heliport Environmental Data: Indianapolis Downtown
Heliport, Wall Street Heliport. Volume 3. Indianapolis Downtown
Heliport Data Plots.
DN (9) Technical note
AU (10) Weiss, Rosanne M.
Morrow, John G.
Gallagher, Donald
DiMeo, Mark

Erlishman, Scott
RD (11) Oct 1989
PG (12) 436 Pages
RS (14) DOT/FAA/CT-TN87/54-VOL-3
RC (20) Unclassified report
NO (21) See also Volume 1, AD-A206 708.
DE (23) *HELIPORTS
DATA ACQUISITION, DATA MANAGEMENT, DETECTORS, DOWNWASH,
ENVIRONMENTS,
HELICOPTERS, INTERVIEWING, MANEUVERABILITY, METEOROLOGICAL DATA,
PERCEPTION, PILOTS, PLOTTING, ROTOR BLADES(ROTARY WINGS), SUMMER,
TRANSMITTERS, VECTOR ANALYSIS, WIND, WIND VELOCITY
AB (27) During the summer of 1987 heliport environmental data were collected at
the Indianapolis Downtown Heliport and at New York's Wall Street
Heliport. The purpose of this data collection activity was to obtain
measures of rotorwash in the heliport environment due to maneuvering
helicopters, and to obtain pilot perceptions and observations
concerning maneuvering and parking separation criteria. Ten wind vector
transmitters were situated at various locations around the heliport in
order to gather information to describe the rotorwash induced wind
speed and direction changes. Pilot interviews were also conducted at
these heliports. This volume (Volume III) provides the plots generated
from the wind sensor data collected at the Indianapolis Downtown
Heliport. The results of this study will be considered in future
modifications of the Federal Aviation Administration (FAA) Heliport
Design Advisory Circular. Keywords: Rotor downwash; Wind speed;
Heliport.

AN (1) AD-A219 405/XAG
FG (2) 210400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Turbine Fuel Alternatives (Near Term).
DN (9) Final rept.
AU (10) Ferrara, Augusto M.
RD (11) Oct 1989
PG (12) 49 Pages
RS (14) DOT/FAA/CT-89/23
RC (20) Unclassified report
DE (23) *AVIATION FUELS, *ETHANOLS, *JET ENGINE FUELS, *METHANOLS
BLENDING, DYNAMOMETERS, FLIGHT TESTING, FUEL SYSTEMS, HIGH
TEMPERATURE,
MIXING, TURBINES, TURBOSHAFT ENGINES

ID (25) Jet-A Fuel, JP-4 Fuel, T-63 Engines, T-34 Aircraft
AB (27) This report discusses the results of a study which investigated several alternatives for turbine fuels, which are being considered for use in the near term, with the intent of identifying the necessary certification criteria. The fuels investigated include Jet-A/ethanol blends, Jet-A/methanol blends, JP-4/ethanol blends, and neat ethanol. The tests were conducted using a T-63 turboshaft engine, which was mounted on the Technical Center's dynamometer. The use of dual fuel systems was also considered. A short series of flight tests was conducted with a T-34, Mentor aircraft. These tests were used to identify the operating conditions which might result in elevated fuel temperature. Keywords: Jet engine fuels; Blending/mixing; Ethanol fuels; Methanol fuels; Turboshaft engines; Aviation fuels. (edc)

AN (1) AD-A219 882/XAG

FG (2) 050300
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
POLICY AND P LANS

TI (6) Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs.

DN (9) Final rept.

AU (10) Keech, Ward
Hoffer, Stefan
Timmerman, Calvin
Beradino, Frank

RD (11) Oct 1989

PG (12) 184 Pages

RS (14) FAA-APO-89-10

RC (20) Unclassified report

DE (23) *AIR, *ECONOMICS, *TRAVEL, *VALUE

AERONAUTICS, AIRCRAFT, AVIATION INJURIES, CAPACITY(QUANTITY), COST EFFECTIVENESS, COSTS, DAMAGE, DECISION MAKING, DOCUMENTS, ENGINEERING

DRAWINGS, PENALTIES, REPLACEMENT, SCHOOLS, STATISTICS, TAXES, THEORY,

TIME, UTILIZATION, WEIGHT, WOUNDS AND INJURIES, AVIATION SAFETY
AB (27) Drawing on economic theory, empirical investigations and data from government, private and academic literature, this report revises economic values commonly used by the Federal Aviation Administration (FAA) in the evaluation of investment and regulatory programs. These include the value of time in air travel, the value of a statistical

life, unit costs of statistical aviation injuries, aircraft capacity and utilization factors, aircraft variable operating costs, unit replacement and restoration costs of damaged aircraft, weight penalty costs, and probabilities of third-party damage. These values, often referred to as 'critical values', provide the bases upon which the effectiveness of the aviation system or changes therein may be denominated and assessed in monetary terms. FAA decision making should ideally discriminate among alternative investment and regulatory actions according to whether or not they entail socially and economically acceptable uses of user and general taxes. Benefit-cost analysis, Economic values, Value of life, Cost of injuries, Value of time, Aircraft replacement costs, Aircraft operating costs. (eg)

AN (1) AD-A214 577/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) ILS (Instrument Landing System) Mathematical Modeling Study of the Effects of Proposed Hangar Construction at the Orlando International Airport, Runway 17R, Orlando, Florida.

DN (9) Technical note

AU (10) Rambone, James D.
Walls, John E.

RD (11) Sep 1989

PG (12) 22 Pages

RS (14) DOT/FAA/CT-TN89/52

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS, *INSTRUMENT FLIGHT, *COMPUTERIZED SIMULATION,

*MATHEMATICAL MODELS

ANTENNAS, AVAILABILITY, BUILDINGS, CONSTRUCTION, DUAL MODE, FLORIDA, GLIDE SLOPE, HANGARS, INTERNATIONAL AIRPORTS, LANDING AIDS, LOG PERIODIC ANTENNAS, MODELS, NULLS(AMPLITUDE), PATHS,

RADIOFREQUENCY,

REFLECTION, REGIONS, RUNWAYS, SIGNALS, SOUTH(DIRECTION), SYMMETRY, TERRAIN, THRESHOLD EFFECTS, TOLERANCE

ID (25) *ILS(Instrument Landing Systems), *ILS Localizer, ILS Glide Path

AB (27) This Technological Note describes the instrument landing system (ILS) math modeling performed by the Federal Aviation Administration (FAA) Technical Center at the request of the Southern Region. Computed localizer data are presented showing the effects of two hangar buildings (Braniff and Comair) on the performance of an ILS localizer proposed for runway 17R at the Orlando International Airport. The

Southern Region is concerned that radio frequency (RF) signal reflections from the two hangars may degrade the localizer course beyond Category II/III tolerances. Modeled course structure results indicate that Category II/III localizer performance should be obtained with the Wilcox Mark II, 14-element, dual-frequency log periodic antenna with both hangar buildings constructed at the currently proposed locations. Computed clearance orbit results indicate satisfactory linearity, course crossover, and signal clearance levels. Data are also presented showing the computed performance for a glide slope proposed for runway 17R at the Orlando International Airport. The null reference glide slope will be located 1050 feet back from runway threshold and 400 feet left offset of centerline. Glide slope modeling computed only the effect of terrain in front of the antenna system and was conducted with the GTD-2D model because of limited terrain data availability. Modeled path structure and level run plots are provided for the proposed null reference system. Modeled results indicate that the proposed site should meet Category II path structure, linearity, and symmetry tolerances. Keywords: Instrument landing; Instrument landing system math modeling; ILS Localizer; ILS Glide slope. (kt)

AN (1) AD-A215 882/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) National Airspace System Plan: Facilities, Equipment, Associated Development and Other Capital Needs.

DN (9) Annual rept.

RD (11) Sep 1989

PG (12) 380 Pages

RC (20) Unclassified report

NO (21) Seventh annual update, See Sixth annual update, AD-A202 615.

DE (23) *AIR SPACE, *AIR TRAFFIC CONTROL SYSTEMS

ADAPTATION, AERONAUTICS, AGING(MATERIALS), AIRCRAFT, EXPANSION, PERSONNEL, PLANNING, PRODUCTIVITY, REDUCTION, REPLACEMENT, UNITED STATES GOVERNMENT, WORK

ID (25) NAS(National Airspace System)

AB (27) The National Airspace System (NAS) is the busiest and most complex in the world. It is a mixture of equipment, techniques, and skills that has evolved over 50 years. Without question, it is the world's safest and most efficient, yet, at the outset of this Plan, its expansion capability was limited and adaptability to changing requirements was difficult. Aviation activity is forecast to increase substantially over the next two decades. Continuing growth in the number of aircraft operations, number of aircraft, enplanements, diversity of operations,

DOD operations and sophistication of aircraft will place unprecedented demands on the NAS. Meeting this challenge requires improved and expanded services, additional facilities and equipment, improved work force productivity, and the orderly replacement of aging equipment. In December, 1981, the Federal Aviation Administration (FAA) chartered a comprehensive NAS Plan for modernizing and improving air traffic control and airway facilities services through the year 2000. This is the seventh annual update of the NAS Plan. The Plan addresses the compelling problems of how best to improve safety and efficiency, accommodate spiraling demands for aviation services, deal with the problems of aging or obsolete facilities, recognize the users desires for minimal restrictions on the use of the airspace, allow for a reduced Federal role, and create a foundation for continued evolution which exploits newer technologies and developments obtained through continuing research. (kr)

AN (1) AD-A216 295/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Simulations for Computer Centerline Approach

AU (10) Billmann, Barry R.

Wolf, Christopher J.

RD (11) Aug 1989

PG (12) 17 Pages

RS (14) DOT/FAA/CT-TN89/41

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS, *SIMULATION

ACCURACY, ALGORITHMS, ALL WEATHER, COMPUTATIONS, COORDINATES,

DATA

MANAGEMENT, DEGRADATION, ERRORS, GROUND LEVEL, GROUND STATIONS,

METHODOLOGY, MONTE CARLO METHOD, NAVIGATION, PANELS, POSITION

FINDING,

POSITION(LOCATION), SIGNALS, SITES, SOURCES,

TRANSFORMATIONS(MATHEMATICS), WORDS(LANGUAGE)

AB (27) Position computation for any Microwave Landing System (MLS) Area Navigation (RNAV) approach has an associated accuracy. This accuracy is affected by several error sources: MLS signal source errors, data word granularity in describing MLS ground station siting, and the MLS RNAV coordinate transformation algorithm. The International Civil Aviation Organization (ICAO) signal source errors and allowable degradation, specified in ICAO annex 10, were used in their simulations. Since the coordinate transformation algorithms are nonlinear, it is necessary to

use Monte Carlo simulation techniques to determine the magnitude of position determination accuracy in the presence of MLS signal source errors. This report presents the results of simulations undertaken by the Federal Aviation Administration (FAA) Technical Center to determine the accuracy of the RNAV at the Categories I and II minima, and at 50 feet above ground level for Category III in the presence of the MLS signal source errors and associated allowable error degradation.
Keywords: All weather operations panel (AWOP). (kr)

AN (1) AD-A212 307/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) An Operational Demonstration and Flight Test of the Microwave Landing System (MLS) at the Miami/Tamiami, Florida Airport.

DN (9) Technical note

AU (10) Bencivenga, Vincent L.
Pursel, Robert H.

RD (11) Jul 1989

PG (12) 35 Pages

RS (14) DOT/FAA/CT-TN89/37

RC (20) Unclassified report

DE (23) *FLIGHT TESTING, *MICROWAVE LANDING SYSTEMS

AERONAUTICS, AIRCRAFT, AIRPORTS, CANADA, COMPUTERS, DEGRADATION, DEMONSTRATIONS, FLORIDA, INDUSTRIES, INSTRUMENT LANDINGS, INTERNATIONAL, LANDING AIDS, NAVIGATION, PRECISION, REGIONS, SIGNALS, TEST BEDS, TRANSPONDERS, TRANSPORT

AB (27) At the request of the Microwave Landing System (MLS) Program Office, the Federal Aviation Administration (FAA) Technical Center conducted an operational demonstration and flight test of the MLS at Miami/Tamiami, Florida Airport. The demonstration/flight test was conducted in conjunction with an MLS seminar jointly sponsored by U.S. Department of Transportation, FAA, and Transport Canada Aviation Group. The Technical Center's MLS test bed, consisting of 1.5 beamwidth elevation station and a 2 beamwidth azimuth station, was transported to, and temporarily installed at the Miami/Tamiami Airport on runway 9R, collocated with the commissioned instrument landing system (ILS). Additionally, an E-Systems preproduction model precision distance measuring equipment (DME/P) transponder was also installed adjacent to the runway 9R localizer equipment shelter. On March 29, 1989, seven 1-hour demonstration and data collection flights were flown for over 60 aviation, industry, and US and international Government attendees. By careful siting of the MLS on runway 9R, proportional MLS signal

coverage was also obtained in the approach regions of runways 9L and 13. By utilizing an FAA Technical Center designed and fabricated MLS area navigation (RNAV) computer on board the demonstration aircraft, precision approaches were flown not only to runway 9R, but also to runways 9L and 13. This demonstrated the tremendous flexibility and operational capability of MLS. The MLS signal-in-space on runway 9R met Category II ILS tolerances. No degradation of the ILS performance due to the MLS collocation was detected during this demonstration. (sdw)

AN (1) AD-A214 114/XAG

FG (2) 090100

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Flammability, Smoke, and Dry Arc Tracking Tests of Aircraft Electrical Wire Insulations.

DN (9) Final rept.

AU (10) Cahill, Patricia

RD (11) Jul 1989

PG (12) 24 Pages

RS (14) DOT/FAA/CT-89/21

RC (20) Unclassified report

DE (23) *ELECTRIC WIRE, *FLAMMABILITY, *INSULATION, *SMOKE

AIRCRAFT, BURNERS, CIRCUIT BREAKERS, COMPOSITE STRUCTURES, FIRE SAFETY,

CONSTRUCTION, CORRELATION, DAMAGE, DIRECTIONAL, ELECTRIC CONDUCTORS,

FLAMES, PILOTS, TEST AND EVALUATION, TEST METHODS, TIME, WIRE, AIRCRAFT, TEST AND EVALUATION

ID (25) Electrical fires

AB (27) Although three different laboratory-scale tests were evaluated in this wire program, only the sixty-degree test is currently required by the Federal Aviation Administration (FAA). All test specimens with the exception of MIL-W-5086/1-PVC nylon passed this test with average burn lengths within the 3-inch maximum and no flame time. The MIL-W-5086/1 samples marginally passed the 30-second flame time, and the average burn length was greater than the 3-inch maximum specified in the FAR. The smoke test method used in this program called for a straight pilot burner when testing insulated conductor specimens. However, data for a multidirectional pilot burner were also included in this report. A direct correlation can be seen between dry arc tracking tests and wet arc tracking tests (DOT/FAA/CT-88/4). Extensive damage to all wires in the bundle occurred due to arc tracking propagation upon circuit

breaker resetting. The TPT composite construction performed well. No dry arc tracking was evident. This construction behaved similarly to a halogenated polymer in this respect. Keywords: Dry arc tracking; Sixty degree flammability tests; Electrical wire insulations; Smoke test. (kt)

AN (1) AD-A214 115/XAG

FG (2) 010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) ILS/MLS (Instrument Landing System/Microwave Landing System) Comparison Tests at Miami/Tamiami, Florida Airport

AU (10) Townsend, John

RD (11) Jul 1989

PG (12) 20 Pages

RS (14) DOT/FAA/CT-TN89/39

RC (20) Unclassified report

DE (23) *FLIGHT CONTROL SYSTEMS, *FLIGHT INSTRUMENTS, *INSTRUMENT FLIGHT,

*MICROWAVE LANDING SYSTEMS, *INSTRUMENT LANDINGS FLIGHT, FLIGHT TESTING

AB (27) A series of flight tests were performed by the Federal Aviation Administration (FAA) Technical Center at the Miami/Tamiami, Florida Airport, to compare the course quality of an instrumented landing system (ILS) with a collected Microwave Landing System (MLS). The Technical Center's test bed MLS was transported to and collected with the commissioned category I ILS on runway 9R at Tamiami. The flight data that was collected indicate that the MLS has less scalloping than the ILS and the MLS azimuth is unaffected by overflight interference.

Keywords: Flight control systems; Air navigation; Landing aids; Instrument landing; Instrument flight. (kt)

AN (1) AD-A210 631/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) ILS (Instrument Landing System) Mathematical Modeling Study on the Effects of Proposed Hangar Construction West of Runway 18R on Localizer Performance at Dallas-Fort Worth International Airport.

DN (9) Technical note for period ending Mar 89

AU (10) Rambone, James D.

Walls, John E.

RD (11) Jun 1989

PG (12) 21 Pages

RS (14) DOT/FAA/CT-TN89/29

RC (20) Unclassified report

DE (23) *HANGARS, *INSTRUMENT LANDINGS

COMPUTATIONS, COMPUTERIZED SIMULATION, RUNWAYS, CONFIGURATIONS, CONSTRUCTION, INTERNATIONAL AIRPORTS, LANDING AIDS,

ID (25) Dallas(Texas), Fort Worth(Texas)

AB (27) This Technical Note describes the instrument landing system (ILS) math modeling performed by the Federal Aviation Administration (FAA)

Technical Center at the request of the Southwest Region. Computed data are presented showing the effects of several proposed hangar configurations on the performance of the ILS localizer for runway 18R at the Dallas-Fort Worth International Airport. The Southwest Region is concerned that reflections from the proposed hangars may degrade the localizer course beyond category II tolerances. Modeled course structure results indicate that category II localizer performance should be obtained with the existing 14/6 Type IB antenna for the proposed hangar configurations. Computed clearance orbit results indicate satisfactory linearity, course crossover, and signal clearance levels. Keywords: Computer models. (kr)

AN (1) AD-A210 632/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) ILS/MLS (Instrument Landing System/Microwave Landing System) Collocation Tests at Miami/Tamiami, Florida Airport.

DN (9) Technical note

AU (10) Townsend, John

RD (11) Jun 1989

PG (12) 23 Pages

RS (14) DOT/FAA/CT-TN89/38

RC (20) Unclassified report

DE (23) *FLIGHT TESTING, *INSTRUMENT LANDINGS, *MICROWAVE LANDING SYSTEMS

AIRPORTS, ENGINEERING, FLORIDA, GUIDANCE, LANDING AIDS, DATA ACQUISITION, MODEL TESTS, TEST AND EVALUATION, TEST BEDS

ID (25) ILS/MLS(Instrument Landing System/Microwave Landing System)

AB (27) A series of tests were performed by the Federal Aviation Administration (FAA) Technical Center at the Miami/Tamiami, Florida, Airport to verify the guidance material contained in the proposed amendments to

Attachment G to Part I of the International Civil Aviation Organization (ICAO) Annex 10 A mock-up of the category Instrument landing system (ILS) on runway 9R. Several engineering flight tests were flown with ILS data collected and analyzed. These results were later verified by actually installing the MLS test bed at one of the locations used for the mockup tests. The results indicate that the proposed guidelines are adequate as published, but several items should be considered when implementing these guidelines. These items are presented as recommendations. (kr)

AN (1) AD-A211 266/XAG

FG (2) 210200
210500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aircraft Jet Engine Exhaust Blast Effects on Par-56 Runway Threshold Lamp Fixtures.

DN (9) Final rept.

AU (10) Struck, Jacob K.
Barile, Anthony J.

RD (11) Jun 1989

PG (12) 79 Pages

RS (14) DOT/FAA/CT-89/4

CT (15) DTFA03-84-A-40020

RC (20) Unclassified report

DE (23) *JET ENGINE EXHAUST, *RUNWAYS, *LAMPS

AIRCRAFT, ALGORITHMS, BLAST, COMPUTER APPLICATIONS, CONTOURS, COVERINGS, DATA ACQUISITION, DETECTORS, DIGITAL SYSTEMS,

ENVIRONMENTAL

IMPACT, ENVIRONMENTS, INSTRUMENTATION, LEVEL(QUANTITY), MAGNETIC

TAPE,

MEASUREMENT, PARAMETERS, PREDICTIONS, ROLL, SOUND PRESSURE,

TAKEOFF,

TEMPERATURE, THRESHOLD EFFECTS, VELOCITY, VIDEO TAPES

AB (27) The effects of jet engine exhaust blast on PAR-56 on lamps located at the runway threshold were measured in this project. Sensors were placed on and near the lamp assemblies which measured blast velocity and temperature, bulb face temperature, lamp fixture acceleration and sound pressure level. These sensors were coupled to a computer-controlled instrumentation system housed in a van located near the threshold of runway 13 at La Guardia Airport. Data were acquired during the engine runup and takeoff roll of some 162 aircraft during the measurement phase. The data were recorded on digital magnetic tape and video tape

to form a permanent record of the raw data. The data were later plotted and analyzed, both manually and using a computer in order to extract the worst case environmental parameters encountered during the measurement phase. A prediction algorithm was developed to allow prediction of key environmental effects on the PAR-56 lamps caused by new aircraft or aircraft not measured. The algorithm was developed by correlating the acquired data against the manufacturers' published jet exhaust blast velocity and temperature contours. A protective shroud was devised and installed on one of the instrumented lamp assemblies during the last portion of data collection. The data suggest a beneficial reduction of the hostile jet blast effects measured on the shrouded lamp versus the unshrouded lamp. (sdw)

AN (1) AD-A211 409/XAG

FG (2) 120300
050900
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) U.S. Civil Airmen Statistics: Calendar Year 1988

AU (10) Carter, Patricia W.

RD (11) 30 Jun 1989

PG (12) 35 Pages

RC (20) Unclassified report

DE (23) *AVIATION PERSONNEL, *CIVIL AVIATION, *STATISTICAL DATA

AERONAUTICS, AIR FORCE PERSONNEL, AIR TRANSPORTATION, AIRCRAFT, COMMERCIAL AVIATION, EXERCISE(PHYSIOLOGY), FLIGHT, GROUND LEVEL, HELICOPTERS, INDUSTRIES, INSTRUCTORS, INSTRUMENTATION, MEDICAL EXAMINATION, MEDICINE, NAVIGATORS, OKLAHOMA, PILOTS, RATINGS, URBAN AREAS

AB (27) This report furnishes detailed airmen statistics. It contains calendar year statistics on pilots and nonpilots and number of certificates issued. The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active Airmen is one who hold both an airmen certificate and a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots, glider, flight navigators, and lighter-than-air pilots are not required to have a

medical examination but the numbers represent only those who had a valid medical certificate. Mechanics, Parachute riggers, ground instructors, and dispatchers certificates represent all certificates on record at the Aeronautical Center. Keywords: Certificates held, Nonpilot, Private, Commercial, Student, Airline transport, Glider, Helicopter, Lighter-than-air, Instrument ratings, Flight instructors, Pilot certificates issued. (sdw)

AN (1) AD-A212 663/XAG

FG (2) 170700

130800

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) LORAN C Stability Integrity Assurance

AU (10) Wisser, Thomas

RD (11) Jun 1989

PG (12) 40 Pages

RS (14) DOT/FAA/CT-TN88/13

RC (20) Unclassified report

DE (23) *LORAN, *MANUFACTURING, *RECEIVERS, *RELIABILITY

ACQUISITION, FLIGHT TESTING, PROBABILITY, SIGNALS, SIMULATION, STATE OF

THE ART, TEST METHODS, ACQUISITION, FLIGHT TESTING, LORAN, MANUFACTURING, PROBABILITY, RECEIVERS, RELIABILITY, SIGNALS, SIMULATION, STATE OF THE ART, TEST METHODS

AB (27) This report describes a program to determine if an operational integrity check is necessary before beginning a Loran C nonprecision approach. Simulation testing and a questionnaire distributed to Loran C receiver manufacturers were used to determine if present state-of-the-art receivers could reliably acquire the Loran C signal. The questionnaire was designed to solicit from manufacturers the probability of reliable acquisition for state-of-the-art receivers and if improvements are possible. Flight tests were also conducted to gather preliminary information related to employing Loran C operational integrity checks prior to initiating a nonprecision approach. (rh)

AN (1) AD-A212 852/XAG

FG (2) 230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Comparison of Protective Breathing Equipment Performance at Ground

Level and 8,000 Feet Altitude Using Parameters Prescribed by Portions of FAA action Notice A-8150.2.

DN (9) Final rept.

AU (10) Schlegel, T. T.

Higgins, E. A.

McLean, G. A.

Lyne, P. J.

England, H. M.

RD (11) Jun 1989

PG (12) 19 Pages

RS (14) DOT/FAA/AM-89-10

RC (20) Unclassified report

DE (23) *BREATHING APPARATUS, *PROTECTIVE EQUIPMENT
CARBON DIOXIDE, COMPRESSION, CONCENTRATION(COMPOSITION),

CYLINDRICAL

BODIES, GROUND LEVEL, HIGH ALTITUDE, HYDROXIDES,

PERFORMANCE(ENGINEERING), INTERNAL, LITHIUM COMPOUNDS, OXYGEN,

OXYGEN

EQUIPMENT, PARTIAL PRESSURE, POTASSIUM COMPOUNDS, SUPEROXIDES,
TEMPERATURE

ID (25) PBE(Protective Breathing Equipment)

AB (27) Two types of crewmember protective breathing equipment (PBE) were performance tested for compliance with Action Notice A-8150.2 at ground level (-1,300 feet) and 8,000 feet altitude. PBE 1 was a 'hood with oral-nasal mask,' which used potassium superoxide to remove carbon dioxide and produce its oxygen supply. PBE 2 was a 'hood only,' which contained lithium hydroxide to absorb carbon dioxide and compressed oxygen cylinders to supply breathable air. The parameters tested were PBE oxygen and carbon dioxide levels, temperature, and breathing resistance-pressure. Five units of each PBE type were subjected to testing; for within-PBE comparisons each type of unit was worn by the same human subjects at both altitudes. Relatively little difference in PBE performance was obtained at the different altitudes for both types of PBE. Oxygen partial pressures were somewhat reduced at the higher altitude for both types of PBE, carbon dioxide partial pressure was slightly greater at ground level for PBE 2, internal temperature was higher for PBE performed adequately for the intended purpose at either altitude, but further testing would be necessary to certify PBE to meet additional requirements, such as use at altitudes above 8,000 feet. Keywords: Protective breathing equipment; Performance; Oxygen systems; Altitude; Tests; (KT)

AN (1) AD-A326 987/XAG

FG (2) 010500
130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Helicopter Visual Segment Approach Lighting System (HALS) Test Report.

DN (9) Technical note for period ending Aug 88

AU (10) Billmann, Barry R.
Shollenberger, Scott

RD (11) Jun 1989

PG (12) 317 Pages

RS (14) DOT/FAA/CT-TN89/21

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *APPROACH LIGHTS, *HELIPORTS

HELICOPTERS, VISUAL PERCEPTION, WORKLOAD, LANDING LIGHTS

ID (25) *HALS(HELICOPTER VISUAL SEGMENT APPROACH LIGHTING SYSTEM),
TERPS(TERMINAL INSTRUMENT PROCEDURE), MLS(MICROWAVE LANDING
SYSTEM),

COOPER HARPER RATINGS

AB (27) The establishment of precision instrument approaches to heliports is hindered by the visual segment guidance which currently exists at most urban area heliports. In the visual segment area, inside and below the decision height (DH) location on precision approach, the pilot normally operates the helicopter uncued through visual reference to the landing environment. The unique handling qualities of helicopters may require enhanced visual segment guidance. The Heliport Versus Segment Approach Lighting System (HALS) has been developed to meet this requirement. However, until now, no flight data in conjunction with MLS approaches had been collected. This Technical Note reports on a test designed to obtain pilot performance subjective pilot data on the Helicopter Visual Segment Approach Lighting System (HALS). Results identify the performance measures which correlate with the pilot's ability to visually acquire a HALS equipped heliport. Conclusions state that HALS can support existing minima to heliports. Pilots reported unacceptable Cooper-Harper ratings for rate of closure and workload without HALS.

AN (1) AD-A208 973/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) LORAN C Field Strength Contours: Contiguous United States.

DN (9) Technical note

AU (10) Garufi, Frank

RD (11) May 1989

PG (12) 110 Pages

RS (14) DOT/FAA/CT-TN89/16

RC (20) Unclassified report

DE (23) *ATMOSPHERIC DISTURBANCES, *FIELD INTENSITY, *LORAN,
*TRANSMITTERS

CONTOURS, DATA BASES, INDICATORS, PLOTTING, UNITED STATES

AB (27) This report describes the development of Loran C field strength contour plots for the contiguous United States (CONUS). Various plots were developed which show Loran C field strength based on measured data, predicted data, and measured data augmented by predicted data. Measured data were taken from a data base formerly developed by the Federal Aviation Administration (FAA) Technical Center at the Atlantic City International Airport, NJ. Predicted data were generated by the Canadian Loran C propagation model. Field strength contour plots of the CONUS are a result of this project. This report concludes that the contours produced are realistic indicators of Loran C field strength for each of the Conus transmitters. Also included in this report are atmospheric noise contours of the CONUS and Loran C coverage contours of the CONUS. (RH)

AN (1) AD-A209 326/XAG

FG (2) 050900

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Relationships of Anxiety Scores to Academy and Field Training
Performance of Air Traffic Control Specialists

AU (10) Collins, William E.

Schroeder, David J.

Nye, Lendell G.

RD (11) May 1989

PG (12) 12 Pages

RS (14) DOT/FAA/AM-89-7

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *ANXIETY

ATTRITION, JOBS, MILITARY PERSONNEL, PERFORMANCE(HUMAN), RECRUITS,
SCORING, STATISTICAL ANALYSIS, STRESSES, STUDENTS, TRAINEES,
TRAINING

AB (27) State-trait anxiety scores were used prior to the 1981 strike of air traffic control specialists (ATCSs) to estimate perceived levels of job stress in field studies of this occupational group. The present study

assessed the relationship between anxiety, as measured by the State-Trait Personality Inventory (STPI), and post-strike ATCS trainee success at the FAA Academy and during field training. The STPI was administered to students who entered the FAA Academy between June 1984 and September 1985. Academy test scores were obtained for 1,790 students in the enroute option. Criterion data included the field training status of the Academy graduates as of July 1988. Statistical analyses determined the relationships between ATCS student scores on the STPI measures and (a) normative data and (b) Academy and field performance. ATCS students reported significantly lower state (current level) and trait (proneness) levels of anxiety than did either college students or military recruits. Individuals who were unsuccessful at the Academy, as well as those who were unsuccessful in the field, had higher overall anxiety scores. Trainees who had relatively high scores (for ATCS) on a combined index of the trait and state measures of anxiety exhibited significantly higher (a) percentages of Academy failures/withdrawals, (b) percentages of option switches in the field, and (c) overall field attrition than did trainees with low scores. Results support the operation of some personality-related self-selection among ATCS applicants regarding anxiety, and the importance of this characteristic for ATCS job success. Keywords: Air traffic controller, Selection. (SDW)

AN (1) AD-A209 327/XAG

**FG (2) 050900
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Prediction of Success in FAA (Federal Aviation Administration) Air Traffic Control Field Training as a Function of Selection and Screening Test Performance

**AU (10) Manning, Carol A.
Rocco, Pamela S.
Bryant, Kevin D.**

RD (11) May 1989

PG (12) 35 Pages

RS (14) DOT/FAA/AM-89-6

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *APTITUDE TESTS, *PERSONNEL SELECTION BASE LINES, CONTROL, CORRELATION, INSTRUCTORS, LABORATORY TESTS, MEASUREMENT, PERFORMANCE TESTS, PERFORMANCE(HUMAN), PREDICTIONS,

AIRPORT RADAR SYSTEMS, RATINGS, SCORING, SETTING(ADJUSTING), SPECIALISTS, SUPERVISORS, TEST AND EVALUATION, AIRPORT CONTROL TOWERS, TRAINING

ID (25) MCAT(Multiplex Controller Aptitude Test), OKT(Occupational Knowledge Test), Success prediction

AB (27) This study compared correlations between Office of Personnel Management (OPM) selection test scores for Air Traffic Control Specialists (ATCSs) and scores from the FAA Academy's second-stage screening program with measures of field training performance. Field training performance measures were collected for 3,185 en route and 1,740 terminal ATCS developmentals. Baseline data were also collected from over 125,000 applicants who took the OPM ATCS selection battery and over 9,000 entrants to Academy programs. Separate analyses were conducted for developmentals assigned to en route centers, VFR towers, and terminal radar facilities. The Multiplex Controller Aptitude Test (MCAT) predicts field training performance better for en route developmentals than any other OPM test. MCAT is not predictive of field training performance for terminal developmentals, but scores on the Occupational Knowledge Test (OKT) are predictive. For both en route and terminal developmentals, Academy laboratory performance scores are more predictive of field training performance than are academic test scores; for developmentals at VFR towers, the average Academy block test score predicts about as well as the laboratory performance scores. Adjusting correlations for restriction in the range of scores on selection procedures revealed that while the OPM rating and the Academy course grade predict some measures of developmental training performance equally well, the Academy performance measures, particularly the laboratory performance scores, are better predictors of supervisor/OJT instructor ratings and training status than are OPM scores.

AN (1) AD-A210 633/XAG

**FG (2) 170703
201400
090100**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Addition of Bendix MLS (Microwave Landing System) Antenna Patterns to MLS Mathematical Model.

DN (9) Technical note Jan-Feb 89

AU (10) Jones, Jesse D.

RD (11) May 1989

PG (12) 120 Pages

RS (14) DOT/FAA/CT-TN89/26
RC (20) Unclassified report
DE (23) *ANTENNA RADIATION PATTERNS, *ANTENNAS, *MICROWAVE LANDING SYSTEMS
CODING, MATHEMATICAL MODELS, PATTERNS, TEST AND EVALUATION, TEST BEDS,
TEST EQUIPMENT, TEST METHODS
AB (27) Bendix Microwave Landing System (MLS) test bed antenna patterns were added to the MLS mathematical model. This report documents the method of installation, the required alterations of existing code to support the new patterns, and the results of testing of the new patterns with standard test scenario two. The tests yielded acceptable results. (rh)

AN (1) AD-A210 882/XAG
FG (2) 250500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Performance Evaluation of the Puritan-Bennett Crewmember Portable Protective Breathing Device as Prescribed by Portions of FAA Action Notice A-8150.2.

DN (9) Final rept.

AU (10) Higgins, E. A.

McLean, G. A.

Lyne, P. J.

Funkhouser, G. E.

Young, J. W.

RD (11) May 1989

PG (12) 101 Pages

RS (14) DOT/FAA/AM-89-8

RC (20) Unclassified report

DE (23) *BREATHING APPARATUS, *FLIGHT CREWS

ALTITUDE CHAMBERS, CHAMBERS, ELASTIC PROPERTIES, EXHALATION, INHALATION, ITERATIONS, MATERIALS, NECK(ANATOMY), PERFORMANCE TESTS,

PRESSURE, PROFILES, QUALITY ASSURANCE, QUALITY CONTROL, SEALS(STOPPERS), SEQUENCES, SMOKE, TEMPERATURE, TEST AND EVALUATION,

TEST FACILITIES, VALVES, WORKLOAD

AB (27) This study was undertaken, on request, to evaluate the performance of the Puritan-Bennett portable crew protective breathing device for contaminant leaks. O₂, CO₂ levels, inhalation/exhalation pressure, and inhalation temperature. Tests were conducted in the facilities of the

FAA Civil Aeromedical Institute (CAMI) in Oklahoma City, OK, (test chamber and altitude chamber). The duration and workload profile are described in FAA Action Notice A-8150.2. The test sequence followed an iterative process in which problems were identified, modifications made to correct deficiencies, and the device retested until problems could be solved. The test sequence was as follows: First, the neck seal material was not elastic enough and a more suitable material was identified and substituted; Second, the size of the opening of the neck seal had to be reduced to protect the smaller subjects; Third, identification of increased CO₂ resulting from the occasional inversion of the exhalation valve was found, and was solved by improving the valve support design; Fourth, leaks encountered at locations other than neck seals were overcome through improved quality control for more impermeable seams and hardware seals. Thus, with adequate quality assurance, the final version of the Puritan-Bennett crewmember portable protective breathing device, as tested at CAMI, would meet the requirements of FAA's Action Notice A-8150.2 regarding contaminant leak protection O₂ concentration, CO₂ concentration, inhalation/exhalation pressures and inhalation temperature. Keywords: Breathing apparatus; Smoke. (kt)

AN (1) AD-A212 312/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analysis of Heliport Environmental Data: Indianapolis Downtown Heliport Wall Street Heliport. Volume 2. Wall Street Heliport Data Plots.

DN (9) Technical note

AU (10) Weiss, Rosanne M.

Morrow, John G.

Gallagher, Donald

DiMeo, Mark

Erlichman, Scott

RD (11) May 1989

PG (12) 1147 Pages

RS (14) DOT/FAA/CT-TN87/54-VOL-2

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A206 708.

DE (23) *HELIPORTS

DATA ACQUISITION, DETECTORS, DOWNWASH, ENVIRONMENTS, HELICOPTERS,

INTERVIEWING, MANEUVERABILITY, METEOROLOGICAL DATA, PILOTS, ROTOR

BLADES(ROTARY WINGS), SUMMER, TRANSMITTERS, VECTOR ANALYSIS,
WIND, WIND
VELOCITY

AB (27) During the summer of 1987 heliport environmental data were collected at Indianapolis Downtown Heliport and at New York's Wall Street Heliport. The purpose of this data collection activity was to obtain measures of rotorwash in the heliport environment due to maneuvering helicopters, and to obtain pilot perceptions and observations concerning maneuvering and parking separation criteria. Ten wind vector transmitters were situated at various locations around the heliport in order to gather information to describe the rotorwash induced wind speed and direction changes. Pilot interviews were also conducted at these heliports. Volume I of this report provides a summary of the results of this activity. Volume III provides the plots generated from the wind sensor data collected at the Indianapolis downtown Heliport. This volume (Volume II) provides the plots generated from the wind sensor data collected at New York's Wall Street Heliport. The results of this study will be considered in future modifications of the Federal Aviation Administration (FAA) Heliport Design Advisory Circular. Keywords: Rotor downwash; Wind speed; Heliport. (SDW)

AN (1) AD-A220 439/XAG

**FG (2) 150300
010600**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Rept. 1 Jul-31 Dec 88.

RD (11) May 1989

PG (12) 43 Pages

RS (14) DOT/FAA-ACS-88-1(29)

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *COMMERCIAL AVIATION, *SECURITY
AIRCRAFT HIJACKING, BOMBS, CRIMES, MILITARY PUBLICATIONS,
PASSENGERS,
SABOTAGE, THREATS

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other

aspects of the Civil Aviation Security Program. Keywords: Military publications, Periodicals, Reports. (EG)

AN (1) AD-A209 805/XAG

**FG (2) 010500
170703
010600
050300**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY
AND PLANS**

TI (6) Terminal Area Forecasts: FY 1989 - 2005.

RD (11) Apr 1989

PG (12) 527 Pages

RS (14) FAA-APO-89-5

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *AIRPORT CONTROL TOWERS, *AIRPORTS, *CIVIL AVIATION AERONAUTICS, AIR TRAFFIC CONTROL SYSTEMS, AIR TRANSPORTATION, COMMERCIAL AIRCRAFT, AIRCRAFT INDUSTRY, AIRPORT RADAR SYSTEMS, APPROACH, COMMERCIAL AVIATION, CONTRACTS, FORECASTING, PLANNING, TERMINAL FLIGHT FACILITIES, MILITARY AIRCRAFT, UNITED STATES

ID (25) Emplanements, General aviation, Military aviation

AB (27) This report contains forecasts of aviation activity for 850 airports in the United States for fiscal years 1989-2005. These include 398 airports with FAA air traffic control towers and radar approach control service and 17 FAA contract towers. For each, airport, detailed forecasts are made for the four major users of the air traffic system: air carriers, air taxi/commuters, aviation, and military. Summary tables contain national, FAA regional, and State aviation data and other airport specific highlights. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA headquarters and regional offices and to provide airport-specific information that can be used by State and local aviation authorities, the aviation industry, as a whole, and the general public. Keywords: Air-traffic-control terminal areas; Air traffic; Airport control towers; Airport forecasts; Aviation activity; Terminal area forecasts; Emplanements; Aircraft operations; Air carriers; Commuter aircraft, Air taxis; General aviation; Military aviation; Airport radar systems. (edc)

AN (1) AD-A291 530/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Heliport Identification Beacon.

DN (9) Technical note

AU (10) Jones, Paul H.

RD (11) Apr 1989

PG (12) 14 Pages

RS (14) DOT/FAA/CT-TN89/31

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *FLASH LAMPS, *BEACONS, *HELIPORTS

UNITED STATES, PILOTS, SEQUENCES, IDENTIFICATION, RESPONSE,
STANDARDIZATION, WHITE LIGHT, FLASHES, STROBOSCOPES

AB (27) The International Civil Aviation Organization (ICAO) has proposed the adoption of a standard international heliport beacon. This beacon consists of a white strobe light coded to display a sequence of four flashes that signify the Morse code letter 'H'. For evaluation purposes, the proposed strobe beacon was compared to the United States standard three-color rotating beacon. Pilots completed post-flight questionnaires after viewing both beacons. Without any clear-cut choice U to which beacon was the best, pilot responses indicated that both beacons provide adequate guidance in locating a heliport. From these results, we conclude that there does not appear to be reasonable cause for opposing adoption of the proposed strobe beacon as an ICAO standard. Furthermore, there does not appear to be any compelling reason to change the present United States standard for heliport identification beacons at this time.

AN (1) AD-B225 677/XAG

FG (2) 010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Heliport Identification Beacon.

DN (9) Technical note

AU (10) Jones, Paul H.

RD (11) Apr 1989

PG (12) 15 Pages

RS (14) DOT/FAA/CT-TN89/31

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *HELIPORTS, *STROBOSCOPES

STANDARDIZATION, INTERNATIONAL, BEACON LIGHTS
DL (33) 12

AN (1) AD-A206 709/XAG

FG (2) 010500

060400

230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Air Traffic Controller Scanning and Eye Movements in Search of
Information - A Literature Review.

DN (9) Technical note Jun-Dec 88

AU (10) Stein, Earl S.

RD (11) Mar 1989

PG (12) 30 Pages

RS (14) DOT/FAA/CT-TN89/9

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *EYE MOVEMENTS, *SCANNING
AIR TRAFFIC CONTROL SYSTEMS, BENEFITS, CONTROL, ERRORS,
FREQUENCY,

HUMAN FACTORS ENGINEERING, LITERATURE SURVEYS, SEARCHING

AB (27) The Federal Aviation Administration is engaged in an on-going research effort designed to help air traffic controllers reduce the frequency of operational errors. This literature search and review was a first step in the study of controller scanning for information. Results indicate that the study of eye movement is a very complex process even given the current technology available. Another finding is that there has been very little accomplished in the study of air traffic controllers scanning and eye movements. The field is wide open and the potential benefits are large. Keywords: Air traffic control, Human factors engineering, Eye movement, Scanning. (SDW)

AN (1) AD-A206 716/XAG

FG (2) 010600

010500

170703

050300

150500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS

TI (6) FAA (Federal Aviation Administration) Aviation Forecasts: Fiscal Years

1989-2000.

RD (11) Mar 1989
PG (12) 252 Pages
RS (14) FAA-APO-89-1
RC (20) Unclassified report
DE (23) *AIR TRAFFIC, *AIR TRANSPORTATION, *AIRPORTS, *CIVIL AVIATION
AERONAUTICS, AIR TRAFFIC CONTROL SYSTEMS, AIRCRAFT INDUSTRY,
COMMERCIAL
AVIATION, COSTS, DOMESTIC, ECONOMICS, FLIGHT, FORECASTING, AVIATION
FUELS, GROWTH(GENERAL), HELICOPTERS, MATHEMATICAL PREDICTION,
MILITARY
AIRCRAFT, PASSENGER AIRCRAFT, STATIONS, STATISTICAL DATA,
STATISTICS,
AIRPORT CONTROL TOWERS
ID (25) General aviation, Air taxis, Commuter airlines, Military aviation,
Aviation activity forecasts
AB (27) This report contains forecasts of aviation activity at FAA facilities.
These include airports with FAA control towers, air route traffic
control centers, and flight service stations. Detailed forecasts were
made for the four major users of the National Aviation System: air
carriers, air taxi/commuters, general aviation and the military. The
forecasts were prepared to meet the budget and planning needs of the
constituent units of the FAA and to provide information that can be
used by state and local authorities, by the aviation industry, and by
the general public. The overall outlook for the forecast period is for
continued economic growth, rising real fuel prices, and moderate
inflation. Based upon these assumptions, aviation activity by fiscal
year 2000 is forecast to increase by 31.0% at towered airports
(commuters, 51.8%; air carriers, 34.6%; general aviation, 27.5%;
military, 0.0%), 32.0% at air route traffic control centers (commuters,
55.2%; air carriers, 33.7%; general aviation, 30.0% military, 0.0%, and
7.8% in flight services performed. Hours flown by general aviation are
forecast to increase 14.9% and helicopter hours flown, 82.6%. Scheduled
domestic revenue passenger miles (RPM's) are forecast to increase
73.6%, with scheduled international RPM's forecast to increase by
104.9%; and regionals/commuters RPM's forecast to increase by 158.7%.
Keywords: Air transportation; Civil aviation; Commercial aviation;
Military aircraft; Air traffic statistical data; Commuter airlines; Air
carriers; Aviation statistics, Air taxis; Aviation activity forecasts;
General aviation, Military aviation; Mathematical prediction. (EDC)

AN (1) AD-A207 162/XAG
FG (2) 010301

010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ADVANCED
SYSTEM DESIGN
SERVICE**

**TI (6) FAA Rotorcraft Research, Engineering, and Development Bibliography,
1962-1988. Supplement**

AU (10) Smith, Robert D.
RD (11) Mar 1989
PG (12) 103 Pages
RS (14) DOT/FAA/DS-89/03
RC (20) Unclassified report
NO (21) Supplement to report dated Nov 86, AD-A174 697.
DE (23) *HELICOPTERS
TILT ROTOR AIRCRAFT, BIBLIOGRAPHIES, HELIPORTS, POWERED LIFT,
REPORTS,
ROTARY WING AIRCRAFT, VERTICAL TAKEOFF AIRCRAFT

ID (25) Vertiports
AB (27) This bibliography of FAA rotorcraft reports published from 1962 to 1988
is a supplement to an earlier bibliography. Both bibliographies are
limited to documents in which the research, engineering, and
development elements of the FAA were involved as sponsors,
participants, or authors. This bibliography contains abstracts on 53
technical reports. The indexes in this document address these 53
reports as well as the 133 reports in the earlier bibliography
(FAA/PM-86/47). Keywords: Helicopters; Heliports; Rotorcraft
bibliography; Tiltrotor aircraft; Vertiport; Powered-lift aircraft.
(edc)

AN (1) AD-A208 401/XAG

FG (2) 010500

010200

040200

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Heliport Night Parking Area Criteria Test Plan.

DN (9) Technical note
AU (10) Plotka, Marvin S.
Weiss, Rosanne M.

RD (11) Mar 1989
PG (12) 14 Pages
RS (14) DOT/FAA/CT-TN88/45
RC (20) Unclassified report
DE (23) *HELICOPTERS, *HELIPORTS, *PARKING FACILITIES, *WIND

DATA ACQUISITION, DATA REDUCTION, FLIGHT, FLIGHT MANEUVERS, FLIGHT TESTING, GROUND LEVEL, INTERNATIONAL AIRPORTS, MANEUVERS, METEOROLOGY, NEW JERSEY, OPTICAL IMAGES, PLANNING, SEPARATION, TEST AND EVALUATION, TEST EQUIPMENT, WIND VELOCITY

ID (25) Test planning, H-1 aircraft, Visual meteorology conditions

AB (27) This flight test plan describes the method to examine the issue of heliport night parking surface separation criteria. Operational measures will be collected at the FAA Technical Center, Atlantic City International Airport, New Jersey, using an instrumented UH-1H helicopter. Flight maneuvers will be conducted at the Technical Center to identify night parking area separation criteria under various wind conditions. Wind velocity and direction data will be collected during night parking operations to determine effects at different locations around the parking area. This data will be used to create a baseline for characterizing heliport night parking area separation criteria. The test development, test equipment, data collection, data reduction, and analysis of flight data are discussed. A schedule for the completion of the associated tasks is presented. Keywords: VMC (Visual Meteorological Conditions), Night parking surfaces, Surface maneuvers, Separation criteria, Heliports, Helicopters. (EDC)

AN (1) AD-A208 871/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Controller Evaluation of Initial Data Link Air Traffic Control Services: Mini Study 2. Volume 1.

DN (9) Final rept.

AU (10) Talotta, Nicholas J.

Pagano, Thomas

Gabrieli, Haim

Marek, Henry

VanCampen, William

RD (11) Mar 1989

PG (12) 36 Pages

RS (14) DOT/FAA/CT-89/14-VOL-1

RC (20) Unclassified report

DE (23) *SEARCH RADAR

ACCEPTABILITY, AIR TO SURFACE, AIRCRAFT, AIRCRAFT EQUIPMENT, ALTITUDE,

CODING, CONTROL, DATA LINKS, DELAY, DELIVERY, DIGITAL SYSTEMS, GROUND

LEVEL, IDENTIFICATION, INTERROGATION, POSITION(LOCATION), RESPONSE, ROTATING ANTENNAS, ROTATION, SECONDARY, SIMULATION, TEST AND EVALUATION, TEST BEDS, TRANSMITTING, TRANSPONDERS, WORKLOAD, AIR TRAFFIC CONTROL SYSTEMS, RADIO LINKS

ID (25) *Mode S radar

AB (27) The Mode S is a secondary surveillance radar which will replace the current Air Traffic Control Radar Beacon System (ATCRBS). The ATCRBS uses ground-based rotating antenna that transmits continuous radio frequency (RF) interrogations to which a transponder equipped aircraft will respond. The replies provide the ATC system with an aircraft identification code or the aircraft altitude. Aircraft location information is provided by the rotational position of the antenna and the transponder response delay at the time a reply is received. The Mode S will provide the same functions as the ATCRBS, but will do so more accurately while offering the additional capability of transmitting digital information across a two-way, air-ground Data Link. These enhancements are possible because each aircraft will be assigned a unique address code which will be used in the system's interrogations to select only the requested aircraft to respond. This report details the results of Mini Study 2. This Mini Study was conducted utilizing the Data Link test bed. Initial Data Link air traffic control services were evaluated under part task simulation conditions in order to identify service delivery methods which optimize controller acceptance, performance, and workload. (fr)

AN (1) AD-A209 139/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Airline Delay: 1976 - 1986: Based upon the Standardized Delay Reporting System

AU (10) Geisinger, Kenneth

RD (11) Mar 1989

PG (12) 40 Pages

RS (14) FAA-APO-88-13

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *COMMERCIAL AVIATION, *DELAY, *STATISTICAL DATA

AIR SPACE, AIR TRAFFIC CONTROL SYSTEMS, AIRBORNE, AIRCRAFT, ARRIVAL, CIVIL AVIATION, COSTS, TAKEOFF, FLIGHT, GATES(CIRCUITS), INTERNATIONAL

AIRPORTS, MECHANICS, OPTIMIZATION, PROBLEM SOLVING, REPORTS,
STORMS,
TIME

ID (25) SDRS(Standardized Delay Reporting System)

AB (27) This report summarizes delay and delay cost data obtained from the Standardized Delay Reporting System (SDRS) from 1976 through 1986. The SDRS contains reports from three major air carriers: American, Eastern, and United Airlines. Delay is defined in this report as the difference between the actual and optimal flight times. The optimal time is that required in the absence of other aircraft in the system or problems such as equipment outages or severe weather. Delay is reported for four phases of flight: 1) air traffic control gate hold, 2) delay between gate push back and lift-off (taxi-out delay), 3) delay between lift-off and touchdown (airborne delay), and 4) delay between touchdown and gate arrival (taxi-in delay). SDRS does not measure delay against scheduled flight times (which anticipate a certain amount of delay) nor does the SDRS report delay due to aircraft mechanical problems and other factors not related to congestion in the airport and airspace system. Thus, statistics in this report may differ from airline performance figures published by the Department of Transportation (DOT), which measure delay against published airline schedules and include delay resulting from other causes. Keywords: Air traffic control systems, Civil aviation, Air Space, International airport. (SDW)

AN (1) AD-A209 234/XAG

FG (2) 230600

230500

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) 'Operation Workload' A Study of Passenger Energy Expenditure during an
Emergency Evacuation.

DN (9) Final rept.

AU (10) Higgins, E. A.

Vant, James H.

RD (11) Mar 1989

PG (12) 38 Pages

RS (14) DOT/FAA/AM-89-5

RC (20) Unclassified report

DE (23) *BREATHING APPARATUS, *EMERGENCIES, *EVACUATION, *PASSENGERS,
*WORKLOAD

ENERGY CONSUMPTION, OPERATION, PROTECTIVE EQUIPMENT,
QUALIFICATIONS,

REQUIREMENTS, TEST AND EVALUATION, AVIATION SAFETY

ID (25) *Aircraft Evacuation, *Aircraft Escape

AB (27) In an earlier study at the Civil Aeromedical Institute, workloads were determined for passengers during an emergency evacuation. The evacuation tests were conducted in an orderly manner and were suggested as representative of a moderate workload. The current study is a continuation and amplification of that study and utilizes similar techniques for determining workload. In this study, passengers were required to avoid aircraft aisles and to traverse over seat backs to the exit in order to simulate a maximum effort which might be anticipated in an emergency. Thus, maximum workload could be estimated more realistically. This information is necessary to formulate qualification requirements for passenger protective breathing equipment. Recommended values proposed in the first study should be modified. (GC)

AN (1) AD-A210 699/XAG

FG (2) 170703

250100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Controller Evaluation of Initial Data Link Air Traffic Control

Services: Mini Study 2. Volume 2.

DN (9) Final rept.

AU (10) Talotta, Nicholas J.

RD (11) Mar 1989

PG (12) 73 Pages

RS (14) DOT/FAA/CT-89/14-VOL-2

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DATA LINKS

ACCEPTABILITY, CONTROL, DELIVERY, SIMULATION, TEST AND EVALUATION,

TEST

BEDS, WORKLOAD

AB (27) This report details the results of Mini Study 2. This Mini Study was conducted at the Federal Aviation Administration (FAA) Technical Center utilizing the Data Link test bed. Initial Data Link air traffic control services were evaluated under part task simulation conditions in order to identify service delivery methods which optimize controller acceptance, performance, and workload. Keywords: Data link; Air traffic control services; Mode S; ATC automation. (sdw)

AN (1) AD-A223 175/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) **MLS Mathematical Model Validation Study Using Airborne MLS Data from Midway Airport Engineering Flight Tests, August 1988.**

DN (9) Technical note

AU (10) Pasquale, Linda
Jones, Jesse D.

RD (11) Mar 1989

PG (12) 42 Pages

RS (14) DOT/FAA/CT-TN90/2

RC (20) Unclassified report

DE (23) *MATHEMATICAL MODELS, *MICROWAVE LANDING SYSTEMS AIRBORNE, AIRPORTS, BUILDINGS, CONFIGURATIONS, ENVIRONMENTS, FLIGHT

PATHS, FLIGHT TESTING, INPUT, INTERFERENCE, MODELS, OUTPUT, PARAMETERS, PROFILES, SCATTERING, SCENARIOS, SENSITIVITY, SIGNALS, SIMULATION, SOURCES, STRATEGY, SUPPORTS, VALIDATION

AB (27) This Microwave Landing System (MLS) mathematical model validation study evaluated the performance of the MLS math model by comparing the results of the model's simulation of flight test profiles flown at Midway Airport in Chicago with actual airborne data collected during the test flights. The study specifically addressed the problems of scattering and shadowing of MLS signals by buildings in the airport environment. The study found that comparisons of model output with real world data showed good agreement. Discrepancies between the two were explainable as either the model's sensitivity to input parameters or the model's 'worst case scenario' strategy. The study supports the conclusion that the MLS math model is a valuable tool for use in the evaluation of potential sources of signal interference for an MLS system configuration in a particular airport environment. (kr)

AN (1) AD-A205 109/XAG

FG (2) 170703
010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) **Description of the Derivation of the Collision Risk Model Used in the Vertical Separation Simulation Risk Model.**

DN (9) Technical note

AU (10) Richie, Joseph M.

RD (11) Feb 1989

PG (12) 20 Pages

RS (14) DOT/FAA/CT-TN88/38

RC (20) Unclassified report

DE (23) *COLLISION AVOIDANCE, *AIR TRAFFIC CONTROL TERMINAL AREAS, *RISK AIRCRAFT, AVIATION ACCIDENTS, CLIMBING, COMPUTER PROGRAMS, CONTROL

CENTERS, EQUATIONS, FLIGHT, FLOW, MATHEMATICAL MODELS, MODELS, NAVIGATION, PARAMETERS, PLANNING, SEPARATION, TRACKING, VERTICAL ORIENTATION, AIR TRAFFIC, INTERNATIONAL AIRPORTS

ID (25) Midair collisions

AB (27) This report presents a brief description of the derivation of the collision risk equations for the use on the vertical separation Midair Collision Simulation Risk Model. It also describes the estimation of the Collision Risk Model parameters for the current 2000-foot standard and the proposed 1000-foot planned vertical separation standard. The model itself consist of specialized computer programs and systematic procedures that realistically and economically simulate aircraft flight-planned movements in the National Airspace System (NAS). These aircraft movements are based on flight plans and tracking data transmitted to Central Flow Control Facility (CFCF) from all the 20 centers that make up the NAS. The task is to find the frequency, N_a , with which a pair of aircraft flying at and above flight level (FL)290 would, by flight-planned intent, be proximate (near each other) in the NAS. The purpose of this mathematical model is to make a quantitative judgement about the safety of the proposed 1000-foot vertical separation, and provide an estimate of the risk of midair collision due to the loss of 1000-foot planned vertical separation. As the result of this first phase of the study, it is recommended that the model be enhanced to do the following: 1) step climbing, and 2) point-to-point navigation. Keywords: Tracking system; Proximity shell; Separation vectors; Collision slab; Central flow.

AN (1) AD-A207 579/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) **Injuries to Seat Occupants of Light Airplanes.**

DN (9) Technical rept.

AU (10) Colangelo, Eugene J.
Russell, Julie C.

RD (11) Feb 1989
PG (12) 37 Pages
RS (14) DOT/FAA/AM-89/3
RC (20) Unclassified report
DE (23) *AVIATION ACCIDENTS, *WOUNDS AND INJURIES
ACCELERATION, AIRCRAFT SEATS, AUTOPSY, AVIATION MEDICINE, AVIATION
SAFETY, DAMAGE, ENERGY LEVELS, FAILURE(MECHANICS), IMPACT, IMPACT
ACCELERATION, JOINTS, RESTRAINT, PASSENGERS, AIRCRAFT, LIGHTWEIGHT
ID (25) *Light airplanes
AB (27) A series of 55 light-airplane accidents was examined in an effort to
demonstrate the role of seats in the genesis of injury in seat
occupants. Good engineering, design of airplane seats is an important
related issue which is not treated in this study. Case selection
attempted to include only those events in which significant but not
extreme accelerations occurred. Ten of the fifty-five cases involved
joint failure of seats and restraint systems. The majority of the
observations were provided by aviation medical examiners who were
typically very highly motivated practitioners of medicine with special
interests and accomplishments in aviation. The other cases were
reported by FAA accident investigators. No reliable marker of energy
level was found in the data collected to control the finding that large
accelerations tend to injure people and damage seats as well as most
other structures regardless of the other interrelationships that might
be involved. Keywords: Aircraft accidents; Airplane seat failure;
Impact injury; Impact acceleration; Aircraft seats; Autopsy; Aviation
safety. (kt)

AN (1) AD-A203 748/XAG
FG (2) 170900
250500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Test Report for the Direct Access Radar/National Airspace System
(DARC/NAS) Bi-Directional Interface Test.
DN (9) Technical note
AU (10) DiMeo, Robert V.
Mullany, T. C.
Tedford, A.
Grossman, L.
RD (11) Jan 1989
PG (12) 67 Pages
RS (14) DOT/FAA/CT-TN89/11
RC (20) Unclassified report

DE (23) *INPUT, *INTERFACES, *OUTPUT, *RADAR
SIMULATION, TEST AND EVALUATION, TRANSPARENCE
AB (27) The results of the DARC/NAS (HOST) bi-directional interface testing are
described in this report. The DARC and NAS systems were physically
connected by the General Purpose Output (GPO)/General Purpose Input
(GPI) lines. Controller and supervisory messages were entered
automatically by time from both the DARC and NAS systems. Both systems
used common simulated radar data. Results were examined by analyzing
recorded data to determine the transparency of the system. (RH)

AN (1) AD-A206 422/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) A Comparison of Detection Efficiency on an Air Traffic Control
Monitoring Task with and without Computer Aiding
AU (10) Thackray, Richard I.
Touchstone, R. M.
RD (11) Jan 1989
PG (12) 12 Pages
RS (14) DOT/FAA/AM-89/1
RC (20) Unclassified report
DE (23) *DETECTION, *MONITORING, *AIR TRAFFIC CONTROL SYSTEMS
AIRCRAFT, ATTENTION, AUTOMATION, CAPACITY(QUANTITY), COMPARISON,
CONFLICT, EFFICIENCY, HYPOTHESES, LOW LEVEL, REDUCTION, COMPUTER
APPLICATIONS, MANUAL OPERATION, AIR TRAFFIC, ANOMALIES
ID (25) *Air traffic control monitoring, Air traffic conflict, Task analysis
AB (27) Future levels of air traffic control automation plan to incorporate
computer aiding features designed to alert the controller to upcoming
problem situations by displaying information that will identify the
situation and suggest possible solutions. Concerns have been expressed
that reliance on such aids may lead to a reduced capacity to detect and
respond to infrequent failures of the automation. The present study
employed a simulated ATC monitoring task with a computer-aiding feature
designed to detect possible aircraft conflict situations. The ability
of subjects to detect occasional failures of the computer-aiding
feature in detecting problem situations was compared with detection
efficiency for these same situations when no computer aiding was
provided. The hypothesis that alertness would be lower and detection
less efficient with computer aiding than when no aiding was employed
was not supported. Applications and limitations of the findings to the
problem of complacency in automated systems are discussed. (fr)

AN (1) AD-A208 195/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inhalation Toxicology. 9. Times-to-Incapacitation for Rats Exposed to Carbon Monoxide Alone, to Hydrogen Cyanide Along, and to Mixtures of Carbon Monoxide Hydrogen Cyanide.

DN (9) Technical rept. Jan-Nov 86

AU (10) Crane, Charles R.

Sanders, Donald C.

Endecott, Boyd R.

RD (11) Jan 1989

PG (12) 27 Pages

RS (14) DOT/FAA/AM-89/4

RC (20) Unclassified report

DE (23) *CARBON MONOXIDE, *HYDROGEN CYANIDE, *INHALATION, *TOXICOLOGY AIRCRAFT CABINS, AIRCRAFT FIRES, ATMOSPHERES, COMBUSTION, CONCENTRATION(COMPOSITION), EQUATIONS, EXPOSURE(PHYSIOLOGY), LABORATORY ANIMALS, POISONOUS GASES, POTENCY, RATS, REGRESSION ANALYSIS, SMOKE, TOXIC HAZARDS, TOXICITY

AB (27) Laboratory rats were exposed to experimental atmospheres that contained

a) carbon monoxide in air, b) hydrogen cyanide in air, and c) mixtures of CO and HCN in air. The toxic potency of each of the three types of environments was evaluated toxico-kinetically by measurement of time-to-incapacitation as a function of toxic gas concentrations.

Regression equations were derived that describe those relationships for exposure to CO or HCN alone. Analysis of the data from the combined-gas exposures, and comparison of that data with the results obtained from the exposures to each gas alone, lead to the conclusion that the toxicity of the combination is definitely greater than would be produced by either gas alone. There was, however, no evidence for a synergistic action--in which the Effect of the combination would have been greater than that predicted from the sum of the two individual effects. An empirical equation was derived that allows calculation of a predicted time-to-incapacitation for any combination of CO and HCN concentrations that are within the ranges utilized in the experimental exposures. Keywords: Combustion toxicology; Smoke; Aircraft cabin fire.

(aw)

AN (1) AD-A214 116/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Heliport Surface Maneuvering Test Results.

DN (9) Technical note Oct 87-Jan 88

AU (10) Weiss, Rosanne M.

Wolf, Christopher J.

Erlichman, Scott L.

Morrow, John G.

RD (11) Jan 1989

PG (12) 81 Pages

RS (14) DOT/FAA/CT-TN88/30

RC (20) Unclassified report

DE (23) *HELIPORTS

GROUND BASED, LASERS, TEST AND EVALUATION, FLIGHT TESTING, PILOTS, HELICOPTERS, PERFORMANCE(HUMAN), TAXIING, PARKING FACILITIES,

TERMINAL

FLIGHT FACILITIES

AB (27) During late fall 1987 and early spring 1988 flight tests were conducted at the Federal Aviation Administration (FAA) Technical Center's National Concepts Development and Demonstration Heliport. The purpose of these tests was to measure pilot perception of helicopter tip clearances for parking and taxiing maneuvers and to measure pilot performance during these maneuvers. Over 100 parking and taxiing maneuvers were conducted using a UH-1H helicopter. The parking procedures were conducted under head, tail, and crosswind conditions, both with and without an obstacle in place. the taxiing procedures were carried out with a centerline, with only side markings, and with no ground markings. A ground-based laser tracker system was used to track the taxiing procedures. Pilot subjective data in reference to these maneuvers were collected via a post-flight questionnaire. Pilot interviews were conducted at heliports across the country. These interviews gathered pilot views concerning rotor tip clearances for parking and hover taxiing maneuvers, ground markings for parking operations, and hover taxiing heights. This report documents the results of this activity. It describes the data collection and analysis methodology and addresses objective as well as subjective issues. It provides statistical and graphical analysis of pilot performance and perception data and pilot subjective data. Keywords: Terminal flight facilities; Heliports; Heliport parking; Heliport taxiing; Rotor tip clearances.

AN (1) AD-A221 263/XAG

FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) The Federal Aviation Administration Plan for Research, Engineering and Development. Volume 1. Program Plan.

RD (11) Jan 1989

PG (12) 155 Pages

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A221 264.

DE (23) *CIVIL AVIATION

AERONAUTICS, AGING(MATERIALS), AIRCRAFT, AIRCRAFT INDUSTRY, AIRPORTS,

ARTIFICIAL SATELLITES, COLLISION AVOIDANCE, LONG RANGE(TIME), OPTIMIZATION, PERFORMANCE(HUMAN), PILOTS, PLANNING, VISION

AB (27) The publication of this Research, Engineering and Development (R,E&D)

Plan represents a new start in the revitalization of the Federal Aviation Administration's (FAA) R,E&D Program. We have taken the initial steps to develop a program to work more closely with the aviation industry and to be responsive to the Aviation Safety Research Act of 1988. The plan also provides a balance between near- and long-term research activities to provide effective solutions to immediate problems and provide a base for the aviation system of the 21st century. Keywords: Civil aviation, Organizational cooperation, National aviation system, Airports, Tiltrotor, Vision enhancement for pilots, Satellite applications, Aging aircraft, Human performance, Collision avoidance, Avoiding atmospheric hazards. (jg)

AN (1) AD-A221 264/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) The Federal Aviation Administration Plan for Research, Engineering and Development. Volume 2. Project Descriptions.

RD (11) Jan 1989

PG (12) 264 Pages

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A221 263.

DE (23) *AVIATION SAFETY, *CIVIL AVIATION

AERONAUTICS, AIR TRAFFIC CONTROL SYSTEMS, AIRBORNE, AIRCRAFT, AIRPORTS,

ARTIFICIAL SATELLITES, AVIATION MEDICINE, HUMANS, MISSIONS, NAVIGATION,

SYSTEMS ANALYSIS, TIME, WEATHER

AB (27) The Federal Aviation Administration (FAA) Research, Engineering, and Development (RE&D) Plan addresses the present and future needs of the

national aviation system through fulfillment of the FAA's major mission areas. The purpose, scope, and primary objectives of the plan are presented in Chapters 1 through 4 of Volume I. This volume contains detailed descriptions of the projects included in the RE&D Plan. For planning purposes, the time frame is broken into three 'windows', with 1989 to 1995 composing the near term, 1996 to 2005 the mid-term, and 2006 to 2015 the far term. The project plans described in this volume have been organized into the following 13 technical areas: system studies, air traffic control, communications, navigation and landing, surveillance, aviation weather, satellite applications, airborne systems, airports, aircraft safety, aviation medicine, security, and human systems and operations. Keywords: Project descriptions, Civil aviation. (jg)

AN (1) AD-A223 185/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Accomplishments under the Airport Improvement Program: Fiscal Year 1989.

DN (9) Annual rept. no. 8

AU (10) Hetsko, Jean

RD (11) 1989

PG (12) 116 Pages

RS (14) DOT/FAA/RP-90-2

RC (20) Unclassified report

DE (23) *AIRPORTS, *TERMINAL FLIGHT FACILITIES

UNITED STATES, OPTIMIZATION, REHABILITATION, RUNWAYS, LIGHTING EQUIPMENT, TAXIWAYS, NOISE REDUCTION, GROUND SUPPORT EQUIPMENT,

FEDERAL

LAW, BUDGETS, GEOGRAPHIC DISTRIBUTION

AN (1) AD-A226 063/XAG

FG (2) 170703

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Air Traffic Activity: Fiscal Year 1989.

RD (11) 1989

PG (12) 213 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS

AIR TRAFFIC CONTROL TERMINAL AREAS, FLIGHT CONTROL SYSTEMS
ID (25) *FAA(Federal Aviation Admin), *Air traffic activity, Flight service
stations, Approach control facilities

AN (1) AD-A228 883/XAG

FG (2) 150607
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL
AVIATION

SECURITY

TI (6) Criminal Acts against Civil Aviation: 1989.

RD (11) 1989

PG (12) 35 Pages

RC (20) Unclassified report

DE (23) *AIRCRAFT HIJACKING, *BOMBING, *CIVIL AVIATION

AIR TRANSPORTATION, AIRCRAFT, AIRPORTS, ATTACK, EXPLOSIONS,
RECORDS,

SABOTAGE, SECURITY, SYMBOLS, TERRORISM, UNITED STATES

AB (27) The Federal Aviation Administration's Office of Civil Aviation Security
maintains records of aircraft hijackings, bombing attacks, and other
significant criminal acts against civil aviation worldwide. These
records include actual and attempted hijackings: explosions aboard
aircraft, at airports, and at airline offices; and other selected
criminal acts against civil aviation. These offenses represent serious
threats to the safety of civil aviation. These offenses represent serious
threats to the safety of civil aviation and, in those incidents
involving U.S. air carriers or facilities outside the United States,
are often intended as symbolic attacks against the United States. This
edition summarizes events which occurred during 1989 and places the
events in perspective within a 5-year period. Keywords: Aircraft
hijackings; Terrorism; Sabotage; Civil aviation. (rwj)

AN (1) AD-A229 303/XAG

FG (2) 010500
120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airport Activity Statistics of Certificated Route Air Carriers:
Calendar Year 1989.

RD (11) 1989

PG (12) 670 Pages

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *STATISTICAL ANALYSIS

AIRCRAFT, AIRPORTS, CAPACITY(QUANTITY), CARGO, COMMERCIAL AVIATION,

PAYLOAD, POSTAL SERVICE, REVENUE SHARING, SEATS, TRAFFIC, VOLUME
AB (27) This edition presents the volume of revenue passenger, freight,
express, and mail traffic handled by the Nation's large certified route
air carriers at each airport served by these airlines during the 12
months ending December 31, 1989. In addition, a presentation of
aircraft departures is shown including detail by aircraft type for
total departures performed in scheduled, nonscheduled, and all
services. Large certificated route air carriers hold Certificates of
Public Convenience and Necessity issued by the Department of
Transportation (DOT) authorizing the performance of scheduled air
transportation. Large certified air carriers operate aircraft with
seating capacity of more than 60 seats or a maximum payload capacity of
more than 18,000 pounds. Data for charter only, commuter, intra-state,
and foreign-flag air carriers are not included in this publication.
(SDW)

AN (1) AD-A229 345/XAG

FG (2) 010600
120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) U.S. Civil Airmen Statistics: Calendar Year 1989.

RD (11) 1989

PG (12) 34 Pages

RC (20) Unclassified report

DE (23) *AVIATION PERSONNEL, *CIVIL AVIATION, *STATISTICS

AERONAUTICS, AIR FORCE PERSONNEL, AIRCRAFT, FLIGHT, GLIDERS,
GROUND

LEVEL, INDUSTRIES, INSTRUCTORS, MEDICAL EXAMINATION, MEDICINE,
NAVIGATORS, OKLAHOMA, PILOTS, TABLES(DATA), STATISTICAL DATA, URBAN
AREAS

AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet
the demands of FAA, other government agencies, and industry for more
detailed airmen statistics than those published in other FAA reports.
Statistics pertaining to airmen, both pilot and nonpilot, were obtained
from the official airmen certification records maintained at the FAA
Aeronautical Center, Oklahoma City, Oklahoma. An active Airmen is one
who hold both an airmen certificate and a valid medical certificate.
Airmen who must have a valid medical to exercise the privileges of
their certificate are all airplane pilots, glider, flight navigators,
and lighter-than-air pilots are not required to have a medical
examination but the numbers represent only those who had a valid
medical certificate. Mechanics, Parachute riggers, ground instructors,
and dispatchers certificates represent all certificates on record at

the Aeronautical Center. Keywords: Tables(data). (KR)

AN (1) AD-A229 739/XAG

**FG (2) 050500
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Census of U.S. Civil Aircraft: Calendar Year 1989.

DN (9) Annual rept.

RD (11) 1989

PG (12) 284 Pages

RS (14) AMS-420

RC (20) Unclassified report

DE (23) AIRCRAFT, AIRCRAFT INDUSTRY, CIVIL AVIATION, GENERAL AVIATION
AIRCRAFT,

INVENTORY, PASSENGER AIRCRAFT

ID (25) Calendar year 1989

AB (27) This report presents information about the U.S. civil aircraft fleet.

It includes detailed tables of air carrier aircraft and an inventory of
registered aircraft by manufacturer and model, and general aviation
aircraft by state and county of the owner.

AN (1) AD-A232 670/XAG

**FG (2) 010300
120300**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) FAA Statistical Handbook of Aviation: Calendar Year 1989.

DN (9) Annual rept.

RD (11) 1989

PG (12) 141 Pages

RC (20) Unclassified report

DE (23) AERONAUTICS, AIR FORCE PERSONNEL, AIR TRANSPORTATION, AIRCRAFT,
AIRPORTS, AVIATION ACCIDENTS, CIVIL AVIATION, DICTIONARIES, EXPORTS,
GENERAL AVIATION AIRCRAFT, HANDBOOKS, IMPORTS, PRODUCTION,

STATISTICAL
DATA

ID (25) *Statistical data, Federal aviation administration, Airports, Air
traffic, Accidents, General aviation, Aeronautical production, Air
carriers, Heliports, Handbooks

AB (27) This report presents statistical information pertaining to the Federal
Aviation Administration, the National Airspace System, Airports,
Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents,
Aeronautical Production and Imports/Exports, and a Glossary of the
terms used in this publication.

AN (1) AD-A236 649/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) General Aviation Activity and Avionics Survey. Calendar Year 1989.

DN (9) Annual summary rept.

RD (11) 1989

PG (12) 472 Pages

RC (20) Unclassified report

NO (21) Prepared in cooperation with Adsytech, Inc., Silver Spring, MD.

DE (23) AIRCRAFT, AIRFRAMES, AVIONICS, CIVIL AVIATION, ENGINES, ESTIMATES,
FLIGHT, FLOW, FUEL CONSUMPTION, FUELS, LIFE SPAN(BIOLOGY), REGIONS,
SURVEYS, UNITED STATES

ID (25) *General aviation aircraft, *Avionics, Fuel consumption,
Range(Distance), Tables data, Statistical data, Time, Geographic
distribution, Flight, Aircraft landings, Instrument flight, Surveys

AB (27) The annual General Aviation Activity and Avionics Survey is conducted
by the FAA to obtain information on the activity and avionics of the
United States registered general aviation aircraft fleet. The report
contains breakdowns of active aircraft, annual flight hours, average
flight hours and other statistics by manufacturer/model group, aircraft
type, state and region of based aircraft, and primary use. Also
included and fuel consumption, Lifetime airframe hours, avionics.
engine hours, and miles flows estimates, tables for detailed analysis
of the avionics capabilities of the general aviation fleet, estimates
of the number of Landings, IFR hours flown, and grade of fuel consumed
by the general aviation fleet.

AN (1) AD-A236 698/XAG

FG (2) 010301

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Rotorcraft Activity Survey.

RD (11) 1989
 PG (12) 159 Pages
 CT (15) DTFA01-Y-88-01026
 RC (20) Unclassified report
 DE (23) AIRCRAFT, AIRFRAMES, ENGINES, FLEETS(SHIPS), FLIGHT, LAW ENFORCEMENT, LIFE SPAN(BIOLOGY), ROTARY WING AIRCRAFT, STATISTICS, SURVEYS, UNITED STATES

ID (25) *Rotary wing aircraft, Statistical data, Tables(Data), Missions, Flight, Range(Distance), Life expectancy(Service Life), Aircraft equipment

AB (27) This report presents the results of a special one-time Rotorcraft Activity Survey. The survey is conducted by the FAA to obtain information on the activity of the United States registered rotorcraft fleet. The report contains breakdowns of active rotorcraft, annual flight hours, average flight hours and other statistics by rotorcraft type, manufacturer/model group, region and state of based aircraft, and primary use. Also included are law enforcement and public use rotorcraft, lifetime airframe hours, engine hours, miles flown estimates, and estimates of the number of landings.

AN (1) AD-A205 351/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Instrument Landing System Mathematical Modeling Study for Orlando International Airport Runway 35L Localizer, Orlando, Florida. Final Airside Docking Plan (Scheme IIIA)

AU (10) Rambone, James D.
 Walls, John E.

RD (11) Dec 1988
 PG (12) 30 Pages
 RS (14) DOT/FAA/CT/TN89/4
 RC (20) Unclassified report
 DE (23) *MICROWAVE LANDING SYSTEMS
 AIRCRAFT, FLORIDA, INSTRUMENT LANDINGS, RUNWAYS, TAXIWAYS, INTERNATIONAL AIRPORTS, LOG PERIODIC ANTENNAS, GLIDE PATH SYSTEMS, TAXIING, RADIO TRANSMITTERS, RADIO RECEPTION

ID (25) Orlando International Airport, *Localizers(Radio transmitters)

AB (27) This Technical Note describes the instrument landing system (ILS) math modeling performed by the Federal Aviation Administration (FAA) Technical Center at the request of the Southern Region. Computed data

are presented showing the effects of airside terminals with simulated docked and taxiing aircraft on the performance of an ILS localizer proposed for runway 35L at the Orlando International Airport. The Southern Region is concerned that reflections from two proposed airside terminals with docked and taxiing aircraft may degrade the localizer course beyond category II/III tolerances. Modeled course structure results indicate that category II/III localizer performance should be obtained with the Wilcox Mark II, 14-element, dual-frequency log periodic antenna and both airside terminals with docked and taxiing aircraft at the currently proposed locations. Computed clearance orbit results indicate satisfactory linearity, course crossover, and signal clearance levels. (fr)

AN (1) AD-A206 710/XAG
FG (2) 250400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Satellite Low Rate Voice Demonstration Test Plan.

DN (9) Test plan Jan 88-Mar 89
 AU (10) Grelis, Joan
 RD (11) Dec 1988
 PG (12) 18 Pages
 RS (14) DOT/FAA/CT-TN88/39
 RC (20) Unclassified report
 DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COMMUNICATION TERMINALS, *COMMUNICATIONS
 NETWORKS, *GROUND STATIONS, *VOICE COMMUNICATIONS
 AIRCRAFT, ARTIFICIAL SATELLITES, CONNECTICUT, CONTROLLED ATMOSPHERES,
 DATA RATE, EARTH(PLANET), LABORATORIES, LOW RATE, MOBILE, PLANNING, QUALITY, STRESS TESTING, TEST AND EVALUATION, TEST BEDS, TEST FACILITIES

AB (27) This test plan describes the design of the demonstration of a low data rate voice Codec communications link via satellite. The demonstration will include the use of 4.8 kbps voice Codec equipment interfaced with a mobile satellite (MSAT) communications terminal installed in the Federal Aviation Administration's (FAA's) B- 727 (N-40) aircraft and similar equipment at the COMSAT ground earth station in Southbury, Connecticut. This configuration, used in conjunction with INMARSAT satellite capability, completes an aircraft-to-satellite-to-ground facility circuit that provides a communications quality voice link between the pilot and the ground. In addition to a demonstration, techniques will be developed for evaluating voice Codecs for air

traffic control (ATC) applications. Controllers from the FAA will be used in the evaluation. A Codec Test Bed Facility will be developed to conduct stress testing in a laboratory controlled environment. This project will allow critical evaluation of digital voice satellite communications technology in a simulated ATC environment. (RH)

AN (1) AD-A206 720/XAG

FG (2) 010200

050200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) National Airspace System Notice to Airmen (NOTAM) System Operational Concept (NAS-SR-NOTAM).

DN (9) Technical note

AU (10) Falato, Betty K.

RD (11) Dec 1988

PG (12) 50 Pages

RS (14) DOT/FAA/CT-TN89/10

RN (18) DOT/FAA/DS-DS-89/05

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *INFORMATION TRANSFER
AERONAUTICS, FACILITIES, REQUIREMENTS, SPECIFICATIONS, TIMELINESS

ID (25) NOTAM(Notices to Airmen), National Airspace System

AB (27) A requirement for the National Airspace System (NAS) to provide timely knowledge to users of information which is essential to safety of flight is identified in the NAS System Requirement Specification, NAS-SR-1000. The primary method of providing timely aeronautical information is via the Notice to Airmen (NOTAM) system. This document presents a concept of operations for the NOTAM system. It describes NOTAM system capabilities and shows the relationships between subsystems, facilities information, and operators/users. It is intended to provide a common perspective for personnel involved in NOTAM-related activities, assist in determining whether the NOTAM system meets formal requirements, and support coordination among the organizations involved with the NOTAM system. Keywords: Aviation safety; Aeronautical information transfer. (edc)

AN (1) AD-A204 722/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Instrument Landing System Mathematical Modeling Study for Orlando

International Airport Runway 17R Localizer, Orlando, Florida, Revised Airside Docking Plan (Scheme IIIA).

DN (9) Technical note

AU (10) Rambone, James D.

Walls, John E.

RD (11) Nov 1988

PG (12) 33 Pages

RS (14) DOT/FAA/CT-TN89/1

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS
AIRCRAFT, CONFIGURATIONS, DOCKING, DUAL MODE, FLORIDA,

INTERNATIONAL

AIRPORTS, LOG PERIODIC ANTENNAS, MATHEMATICAL MODELS, PARALLEL ORIENTATION, PLANNING, RADIOFREQUENCY, RAMPS, REFLECTION, REGIONS, RUNWAYS, SIMULATION, SOURCES, SOUTH(DIRECTION), TAXIING, UTILIZATION, RADIO EQUIPMENT

ID (25) *Localizers(Landing systems), Orlando International Airport

AB (27) Upon the completion of a preliminary modeling effort described in Technical Note DOT/FAA/CT-TN88/35 'ILS Mathematical Modeling Study for Orlando International Airport Runway 17R, 'ASO-430 provided a final version of an airside ramp utilization plan (Scheme IIIA) for the Orlando Airport. This necessitated an additional modeling effort due to changes in aircraft docking arrangements, the addition of taxiing aircraft, and a Delta ramp operations control tower. Computed data are presented showing the effects of airside terminals with simulated docked and taxiing aircraft on the performance of an ILS localizer proposed for runway 17R at the Orlando International Airport. The Southern Region is concerned that reflections from two proposed airside terminals with docked and taxiing aircraft may degrade the localizer course beyond category II/III tolerances. Modeled course structure results indicate that marginal category II/III localizer performance should be obtained with the Wilcox Mark III, 14-element, dual-frequency log periodic antenna and both airside terminals with docked and taxiing aircraft at the currently proposed locations, excluding aircraft taxiing parallel to the runway. Category II/III course structure results are not obtained when the parallel taxiing aircraft are included in the reflecting source configuration. Computed clearance orbit results indicate satisfactory linearity, course crossover, and signal clearance levels. (FR)

AN (1) AD-A219 618/XAG

FG (2) 010500

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) Establishment Criteria for Runway Visual Range System at Nonprecision Instrumented Runway

AU (10) Keech, Ward L.

RD (11) Nov 1988

PG (12) 69 Pages

RS (14) FAA-APO-88-14

RC (20) Unclassified report

DE (23) *RANGE(DISTANCE), *RUNWAYS, *VISUAL PERCEPTION

AIR NAVIGATION, AIR TRAFFIC CONTROL SYSTEMS, AIRPORTS, BENEFITS, COST

ANALYSIS, COSTS, FACILITIES, INVESTMENTS, POSITION(LOCATION)

AB (27) This report presents a benefit/cost analysis of and develops corresponding criteria for establishing Runway Visual Range (RVR) systems at nonprecision instrumented runways. The primary benefit of such investments is in the form of relief of takeoff demand on other (precision instrumented) runways. The criteria developed herein will be effected through a change to FAA order 7031.2C, Airway Planning Standard Number One (APS-1). APS-1 contains the policy and summarizes the criteria used in determining eligibility of terminal locations for establishment, discontinuance and improvements of air navigation facilities and air traffic control services. Applying the criteria developed herein to 106 prospective candidate airports over a 15-year planning horizon from FY 1990 through FY 2004 identifies 43 airports potentially satisfying the criteria. However, since benefit/cost criteria are only but one of several inputs to the FAA decisionmaking process relative to investment in airport facilities and equipment, ultimate site-specific investment actions must be based on all pertinent factors and considerations. Runway visual range, Benefit/cost analysis, Investment criteria, Capital budgeting. (eg)

AN (1) AD-A220 317/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Rept. for 1 Jan-30 Jun 88.

RD (11) Nov 1988

PG (12) 36 Pages

RS (14) DOT/FAA-ACS-88-1(28)

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *AVIATION SAFETY, *SECURITY, *TERMINAL FLIGHT FACILITIES

ACCESS, AERONAUTICS, AIR, AIR TRANSPORTATION, AIRPORTS, EXPLOSIVES, FOREIGN, HAZARDOUS MATERIALS, HIGH RATE, INTERNATIONAL, RISK,

TRAVEL,

UNITED STATES, UNITED STATES GOVERNMENT

AB (27) This report presents a concise picture of the nationwide effectiveness of the procedures used to screen passengers and their carry-on items prior to boarding scheduled and public charter flights, as well as visitors desiring access to air terminal passenger boarding areas. Included in this report is a summary of the assessments conducted by the Federal Aviation Administration's Office of Civil Aviation Security to determine the effectiveness of the security measures at foreign airports served by U.S. air carriers, foreign airports from which foreign air carriers serve the United States, foreign airports which pose a high risk to international air travel, and such other foreign airports as the Secretary of Transportation may deem appropriate. In addition, this report includes a summary of the activities of the Federal Air Marshal (FAM) Program and the changes in security measures which were instituted during this reporting period to prevent or deter terrorist and other criminal acts against civil aviation. Additional information is included on the FAA's K-9 Explosives Detection Team and Aviation Explosives Security Programs, the Hazardous Materials Compliance and Enforcement Program, and the international technical assistance program. (KR)

AN (1) AD-B225 425/XAG

FG (2) 010301

010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test Plan for Helicopter Visual Segment Approach Light System (HALS).

DN (9) Technical note

AU (10) Shollenberger, Scott B.

Billmann, Barry

RD (11) Nov 1988

PG (12) 22 Pages

RS (14) DOT/FAA/CT-TN88/19

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *FLIGHT TESTING, *APPROACH LIGHTS, *HELIPORTS
TEST AND EVALUATION, PILOTS, HELICOPTERS, TRANSPORT AIRCRAFT,
APPROACH
INDICATORS, HELIPADS
ID (25) UH-1H AIRCRAFT
DL (33) 12

AN (1) AD-A201 433/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ADVANCED
SYSTEM DESIGN
SERVICE

TI (6) Minimum Required Heliport Airspace under Visual Flight Rules.

DN (9) Final rept.

AU (10) Smith, Robert D.

RD (11) Oct 1988

PG (12) 25 Pages

RS (14) DOT/FAA/DS-88/12, DOT/FAA/AS-89/1

RC (20) Unclassified report

DE (23) *AIR SPACE, *HELIPORTS

EXPERIMENTAL DATA, FLIGHT, FLIGHT PATHS, HELICOPTERS, MEASUREMENT,
PILOTS, PRECISION, PROFILES, STANDARD DEVIATION, STATISTICAL
DISTRIBUTIONS, TEST AND EVALUATION, VISUAL FLIGHT RULES, VISUAL
PERCEPTION

AB (27) Recently, the FAA started a flight measurement project to examine the issue of minimum required VFR airspace. Test data were collected objectively in a manner similar to what is done to define the minimum airspace for a precision approach. Heliport approach and departure flight profiles were recorded using a variety of subject pilots flying several different helicopters. Data were analyzed statistically to determine the mean, standard deviation, and 6 sigma isoprobability curves. Results of this effort are documented in FAA/CT-TN87/40, Heliport Visual Approach and Departure Airspace Tests. An analysis of the statistical distribution of these data is contained in FAA/CT-TN88/44, Analysis of Distributions of VFR Heliport Data. These test reports are not likely to be the last word on this topic but they should serve to focus the discussion on specific issues in a way that is constructive. This report is intended to focus discussion on how the data should be interpreted, some of the historical issues involved, and the direction to be taken in future work. (JES)

AN (1) AD-A201 995/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Airway Science Curriculum Demonstration Project: Summary of Initial
Evaluation Findings

AU (10) Clough, Debora L.

RD (11) Oct 1988

PG (12) 28 Pages

RS (14) DOT/FAA/AM-88/5

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *TRAINING

CAREERS, CONSISTENCY, DEMOGRAPHY, ELECTRONIC TECHNICIANS,
LIMITATIONS,
PROMOTION(ADVANCEMENT), SPECIALISTS

AB (27) The performance, perceptions, and characteristics of Airway Science hires were compared with those of traditional hires. As of May 12, 1987, a total of 197 Airway Science candidates had been selected into FAA occupations. The demographic characteristics of Airway Science and traditional hires tended to differ, although these differences were more marked for Air Traffic Control Specialists and much less so for Electronics Technicians. Findings for two of the eight project objectives were noteworthy. First, there was considerable evidence of the academic community's interest in and support of the Airway Science curriculum. Second, lower performance on the Air Traffic Control Specialist Initial Qualification Screen program (Terminal/Enroute) was found for Airway Science hires. Few strong, consistent findings were observed for the remaining Airway Science project objectives for which data were available. Two limitations associated with the project evaluation at this time were described. First, greater numbers of both Airway Science hires (particularly Airway Science graduates) and traditional hires are required for a full examination of the project's components. In addition, more time is needed to track the attitudes, perceptions, and performances of project participants, most of whom are still in the early stages of training. Differences between the samples may be expected to emerge over time. Keywords: Selection; Airway science; Career progression. (SDW)

AN (1) AD-A206 050/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Prevalence of Disease among Active Civil Airmen.

DN (9) Final rept.

AU (10) Booze, Charles F., Jr

RD (11) Oct 1988

PG (12) 13 Pages

RS (14) DOT/FAA/AM-89/2

RC (20) Unclassified report

DE (23) *EPIDEMIOLOGY, *PATHOLOGY, *PILOTS

ABDOMEN, AIR FORCE PERSONNEL, AVIATION SAFETY, CARDIOVASCULAR SYSTEM,

CIVIL AVIATION, DEFICIENCIES, EYE, HYPERTENSION, MEDICINE, POPULATION, RELAXATION, DISEASES

AB (27) It has been the policy of the Federal Aviation Administration to medically certify, for a variety of flying privileges, individuals who have a medical deficiency or disease, provided it can be determined that such action does not compromise air safety. This descriptive epidemiologic study presents the point prevalence of pathology among 685,552 active airmen as of January 1, 1988, by major body system. The study also presents other selected pathologies of interest within the major body system. Cardiovascular, eye, and abdominal pathologies represent the most prevalent medical conditions among active airmen (7.5%, 6.4% and 6.3% respectively). Hypertension is the most frequently occurring cardiovascular condition. Prevalence of pathology among active civil airmen, while still considerably less than among the general population, is increasing due to recent emphasis on relaxation of regulatory requirements when consistent with safety. (aw)

AN (1) AD-A206 708/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analysis of Helicopter Environmental Data: Indianapolis Downtown Heliport, Wall Street Heliport. Volume 1. Summary.

DN (9) Technical note for period ending May 88

AU (10) Weiss, Rosanne M.

Morrow, John G.

Gallagher, Donald

DiMeo, Mark

Erlichman, Scott

RD (11) Oct 1988

PG (12) 61 Pages

RS (14) DOT/FAA/CT-TN87/54-VOL-1

RC (20) Unclassified report

DE (23) *DATA ACQUISITION, *HELICOPTERS, *HELIPORTS

ENVIRONMENTS, GRAPHICS, INTERVIEWING, MANEUVERABILITY, PERCEPTION, PILOTS, RESPONSE, SUMMER, TRANSMITTERS, VECTOR ANALYSIS, WIND,

WIND

VELOCITY

AB (27) During the summer of 1987 heliport environmental data were collected at the Indianapolis Downtown Heliport and at New York's Wall Street Heliport. The purpose of this data collection activity was to obtain measures of rotorwash in the heliport environment due to maneuvering helicopters, and to obtain pilot perceptions and observations concerning maneuvering and parking separation criteria. Ten wind vector transmitters were situated at various locations around the helicopter in order to gather information to describe the rotorwash induced wind speed and direction changes. Pilot interviews were also conducted at these heliports. Volume I of this report documents the results of this activity. It describes the data collection and analysis methodology and addresses technical as well as operational issues. It provides graphical descriptions of the heliport environment and of wind speed changes due to rotorwash from maneuvering helicopters, along with analysis of pilot responses. The results of this study will be considered in future modifications of the Federal Aviation Administration (FAA) Heliport Design Advisory Circular (AC) 150/5390-2. (sdw)

AN (1) AD-A206 719/XAG

FG (2) 170703

010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) An Operational Demonstration and Engineering Flight Test of the Microwave Landing System on Runway 22L at Chicago's Midway Airport.

DN (9) Technical note for period ending Sep 88

AU (10) Mackin, Clifford W.

Zyzys, Edmund

Pursel, Robert H.

RD (11) Oct 1988

PG (12) 41 Pages

RS (14) DOT/FAA/CT-TN88/42

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS

DEMONSTRATIONS, ILLINOIS, INTERNATIONAL AIRPORTS, FLIGHT TESTING, INSTRUMENT LANDINGS, LANDING AIDS, PERFORMANCE(ENGINEERING), TEST

AND

EVALUATION

ID (25) Midway Airport

AB (27) At the request of the Great Lakes Region, the Federal Aviation Administration (FAA) Technical Center conducted an operational demonstration of Microwave Landing System (MLS) on runway 22L at Chicago's Midway Airport. The MLS test bed installed at the FAA Technical Center was transported to, and temporarily installed at Chicago's Midway Airport. Three engineering flight tests were conducted on August 27, 28, and 29, 1988, to verify and characterize system operation. On August 30, three demonstration flights were conducted for the aviation industry, the media, and FAA personnel. Three profiles were designed for these flights to demonstrate the operational capabilities of MLS. The operational capability of MLS was successfully demonstrated and the MLS signal in space met Category II instrument landing system (ILS) tolerances. (fr)

AN (1) AD-A202 932/XAG

FG (2) 170703

250100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) **Controller Evaluation of Initial Data Link Air Traffic Control Services: Mini Study 1. Volume 1.**

DN (9) Final rept.

AU (10) Talotta, Nicholas J.

Pagano, Thomas

Gabrieli, Haim

Marek, Henry

VanCampen, William

RD (11) Sep 1988

PG (12) 38 Pages

RS (14) DOT/FAA/CT-88/25-VOL-1

RC (20) Unclassified report

DE (23) *DATA LINKS, *AIR TRAFFIC CONTROLLERS

ACCEPTABILITY, CONTROL, DELIVERY, OPERATIONAL EFFECTIVENESS, SIMULATION, TEST AND EVALUATION, TEST BEDS, WORKLOAD

AB (27) This report details the results of Mini Study 1. This mini study was conducted at the Federal Aviation Administration (FAA) Technical Center utilizing the Data Link testbed. Initial Data Link air traffic control services were evaluated under part task simulation conditions in order to identify service delivery methods which optimize controller acceptance, performance, and workload. This report delineates the results for the first of two mini studies and a research and

development operational evaluation which comprise the Phase I Data Link services package. (SDW)

AN (1) AD-A203 787/XAG

FG (2) 170703

250100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) **Controller Evaluation of Initial Data Link Air Traffic Control Services: Mini Study 1. Volume 2. Appendixes.**

DN (9) Final rept.

AU (10) Talotta, Nicholas J.

RD (11) Sep 1988

PG (12) 116 Pages

RS (14) DOT/FAA/CT-88/25-VOL-2

RC (20) Unclassified report

NO (21) See also volume 1, dated Sep 88, AD-A202 932.

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DATA LINKS

ACCEPTABILITY, CONTROL, DELIVERY, OPERATIONAL EFFECTIVENESS, SIMULATION, TEST AND EVALUATION, TEST BEDS, WORKLOAD

AB (27) This report details the results of mini study 1. This mini study was conducted at the Federal Aviation Administration (FAA) Technical Center utilizing the Data Link test bed. Initial Data Link air traffic control services were evaluated under part task simulation conditions in order to identify service delivery methods which optimize controller acceptance, performance, and workload. This report delineates the results for the first of two mini studies and a research and development operational evaluation which comprise the Phase I Data Link services package. Keywords: Data link, Air traffic control services, Test bed. (SDW)

AN (1) AD-A199 003/XAG

FG (2) 240100

120500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) **A Microcomputer Pollution Model for Civilian Airports and Air Force Bases, Model Description**

AU (10) Segal, H. M.

Hamilton, P. L.

RD (11) Aug 1988

PG (12) 140 Pages
RS (14) FAA-EE-88-4
RN (18) AFESC/ESL-TR-88-53
RC (20) Unclassified report
NO (21) See also rept. nos. FAA-EE-88-3 and FAA-EE-88-5.
DE (23) *AIR POLLUTION, *COMPUTERIZED SIMULATION
AIR FORCE FACILITIES, AIRPORTS, CIVIL AVIATION, CLIMATE, CODING, DATA
BASES, DISPERSING, EMISSION, MATHEMATICAL MODELS, METEOROLOGICAL
DATA,
MICROCOMPUTERS, MODELS, SOURCES
AB (27) This is one of three reports describing the Emissions and Dispersion
Modeling System (EDMS). EDMS is a complex source emissions/dispersion
model for use at civilian airports and Air Force bases. It operates in
both a refined and a screening mode and is programmed for an IBM-XT (or
compatible) computer. This report--MODEL DESCRIPTION--provides the
technical description of the model. It first identifies the key design
features of both the emissions (EMISSMOD) and dispersion (GIMM)
portions of EDMS. It then describes the type of meteorological
information the dispersion model can accept and identifies the manner
in which it preprocesses National Climatic Center (NCC) data prior to a
refined model run. The report presents the results of running EDMS on a
number of different microcomputers and compares EDMS results with those
of comparable models. The appendices elaborate on the information noted
above and list the source code. Keywords: Pollution, Air pollution,
Dispersion model, Emissions model, Data base, Microcomputers, Computer
simulation, Mathematical models. (kt)

AN (1) AD-A199 550/XAG
FG (2) 010500
010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ADVANCED
SYSTEM DESIGN
SERVICE
TI (6) Terminal Control Area Design and Air Traffic Loadings.
DN (9) Final rept.
AU (10) Higgins, Thomas H.
RD (11) 15 Aug 1988
PG (12) 33 Pages
RS (14) DOT/FAA/DS-88/11
RC (20) Unclassified report
DE (23) *COLLISION AVOIDANCE, *AVIATION SAFETY, *AIR TRAFFIC CONTROL
TERMINAL
AREAS

AIR SPACE, AIR TRAFFIC, AIRPORTS, AVIATION ACCIDENTS, CONTROL,
EQUATIONS, INTERACTIONS, LEVEL(QUANTITY), PREDICTIONS, PROBABILITY
DENSITY FUNCTIONS, REPORTS, RESPONSE, RISK, STRESSES
AB (27) The response probability density function (pdf) technique adapted here
uses the pdf's of the variables governing both the air traffic loadings
of stress and the terminal airspace design configurations sensitivity
or strengths. This technique is proposed as a method which may be used
to predict the relative level of safety and collision risk for TCA
design configurations and air traffic loadings. For the first time, a
strong relationship was found between near midair collision reports and
midair collisions for annual operations within the fifty states.
Operations, airports and airspace area were found to relate to these
criteria of safety and provide useful interactive predictor equations.
Keywords: System design criteria, Near midair collision reports, Midair
collisions, Operations, Airports, Airspace area, System response model
aviation safety. (sdw)

AN (1) AD-A199 794/XAG
FG (2) 240100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY
TI (6) A Microcomputer Pollution Model for Civilian Airports and Air Force
Bases. Model Application and Background
AU (10) Segal, H. M.
RD (11) Aug 1988
PG (12) 94 Pages
RS (14) FAA-EE-88-5
RN (18) AFESC/ESL-TR-88-55
RC (20) Unclassified report
DE (23) *AIR POLLUTION
ACCUMULATION, AIR FORCE FACILITIES, AIR QUALITY, AIRPORTS, CIVIL
AVIATION, SOURCES, SCATTERING, AIRCRAFT EXHAUST, GRAPHICS,
COMPUTERIZED
SIMULATION, GROUND VEHICLES, MICROCOMPUTERS, COMPUTER
PROGRAMS,
MATHEMATICAL MODELS, USER MANUALS, AUTOMOBILE EXHAUST
AB (27) This is one of three reports describing the Emissions and Dispersion
Modeling System (EDMS). All reports use the same main title--A
MICROCOMPUTER MODEL FOR CIVILIAN AIRPORTS AND AIR FORCE BASES--but
different subtitles. The subtitles are: (1) USER'S GUIDE - ISSUE 2
(FAA-EE-88-3/ESL-TR-88-54); (2) MODEL DESCRIPTION
(FAA-EE-88-4/ESL-TR-88-53); (S) MODEL APPLICATION AND BACKGROUND

(FAA-EE-88-5/ESL-TR-88-55). The first and second reports above describe the EDMS model and provide instructions for its use. This is the third report. IT consists of an accumulation of five key documents describing the development and use of the EDMS model. This report is prepared in accordance with discussions with the EPA and requirements outlined in the March 27, 1980 'Federal Register' for submitting air quality models to the EPA. Contents: Model Development and Use - Its Chronology and Reports; Monitoring Concorde Emissions; The Influence of Aircraft Operations on Air Quality at Airports; Simplex 'A' -A simplified Atmospheric Dispersion Model for Airport Use -(User's Guide); Microcomputer Graphics in Atmospheric Dispersion Modeling; Pollution from Motor Vehicles and Aircraft at Stapleton International Airport (Abbreviated Report). (FR)

AN (1) AD-A199 795/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) A Microcomputer Pollution Model for Civilian Airports and Air Force Bases. User's Guide - Issue 2

AU (10) Segal, H. M.

RD (11) Aug 1988

PG (12) 46 Pages

RS (14) FAA-EE-88-6

RN (18) AFESC/ESL-TR-88-54

RC (20) Unclassified report

DE (23) *AIR POLLUTION

AIR FORCE FACILITIES, AIR QUALITY, AIRPORTS, CIVIL AVIATION, COMPUTER PROGRAMS, SCATTERING, AIRCRAFT EXHAUST, AUTOMOBILE EXHAUST, MICROCOMPUTERS, COMPUTERIZED SIMULATION, COMPUTER PROGRAMS, MATHEMATICAL MODELS, SOURCES, USER MANUALS

AB (27) Over the past 8 years, the Federal Aviation Administration (FAA) and the United States Air Force (USAF) have developed a number of user-friendly emissions and dispersion models for air quality assessment purposes. The major result of this effort is the Emissions and Dispersion Modeling System (EDMS) which was completed in 1985 and released to the general public. Since that time, major modifications have been made in the EDMS system to enhance its usability and incorporate an integral dispersion model into its code. The approach of this guide is to provide hands-on instructions on how to use the model. The mechanism for doing this is an example problem which is introduced early in this document. Four short sections precede the example problem

instructions. The first shows how the EDMS evolved from the earlier FAA and USAF mainframe models. The next three sections describe the hardware and software required to run Section 5 provides the hands-on instructions to produce: 1) an emissions inventory of all sources at an airport/airbase; and 2) an estimate of the concentrations produced by these sources at four airport locations. An inexperienced user should be able to process the example problem in less than 3 hours. (FR)

AN (1) AD-A199 827/XAG

FG (2) 050800

010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Performance Recovery Following Startle: A Laboratory Approach to the Study of Behavioral Response to Sudden Aircraft Emergencies

AU (10) Thackray, Richard I.

RD (11) Aug 1988

PG (12) 15 Pages

RS (14) DOT/FAA-AM-88/4

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *BEHAVIOR, *EMERGENCIES

AIRCRAFT, AUTONOMIC NERVOUS SYSTEM, INFORMATION PROCESSING, LABORATORIES, LABORATORY PROCEDURES, MOTOR REACTIONS, PATTERNS,

PERCEPTION, PROFICIENCY, RATES, REACTION TIME, RECOVERY, RESPONSE, RESPONSE(BIOLOGY), SHOCK, TRACKING, TRAUMA, VARIABLES

ID (25) LPN-FAA-AM-C-69-PSY-21, LPN-FAA-AM-C-82/83-PSY-106

AB (27) This paper deals with the use of response/recovery rate to auditory startle as a laboratory technique for simulating some of the principal aspects of the initial shock phase of sudden emergency situations. It is submitted that auditory startle, with its unexpectedness, pronounced autonomic reaction, fear-like subjective experience, and frequent behavioral disruption, approximates the response pattern to be expected in the initial shock phase of sudden traumatic emergencies, and that by studying the time course of performance recovery following startle, as well as individual differences in response/recovery rate, we may gain a better understanding of some of the variables related to extreme reactions displayed by individuals in real-life emergency situations. Research studies conducted in our laboratory and in others on performance impairment/recovery following startle are reviewed. These studies include those dealing with initial reaction time to the startle stimulus itself, disruption and recovery rate of perceptual-motor

(tracking) performance following startle, and the time-course of performance recovery in information processing tasks after exposure to startle. Data are also presented showing a relationship of several individual difference variables to performance response/recovery following startle. These variables include autonomic response to the startle stimulus and level of task proficiency prior to startle.

Keywords: Accidents; Emergency behavior; Response time; Startle; Unexpectedness. (sdw)

AN (1) AD-A200 028/XAG

FG (2) 010600

010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Heliport Visual Approach and Departure Airspace Tests. Volume 1. Summary.

DN (9) Technical note Mar-Jul 87

AU (10) Weiss, Rosanne M.

Wolf, Christopher J.

Harris, Maureen

Triantos, James

RD (11) Aug 1988

PG (12) 39 Pages

RS (14) DOT/FAA/CT-TN87/40-1

RC (20) Unclassified report

DE (23) *APPROACH, *HELIPORTS

AIR SPACE, HELICOPTERS, ANGLES, TAKEOFF, CURVATURE,

DEMONSTRATIONS,

FLIGHT, FLIGHT TESTING, GRAPHICS, GROUND LEVEL, MANEUVERS, PATHS, PERFORMANCE(HUMAN), PILOTS, SURFACES, TEST AND EVALUATION,

TRACKING,

VISUAL PERCEPTION, WINTER, WORKLOAD

AB (27) During the winter and spring of 1987 flight tests were conducted at the Federal Aviation Administration (FAA) Technical Center's Concepts Development and Demonstration Heliport at the Atlantic City International Airport, N.J. The purpose of these flights was to examine and validate the current heliport approach/departure surfaces criteria as defined in the heliport Design Guide and to recommend modifications to these surfaces, if appropriate. The flight activities were conducted using aircraft representative of those in the civilian world. Data were collected using approach surfaces of 7.125, 8.00, and 10.00 deg for straight as well as curved path procedures. Also, departure surfaces of 7.125, 10.00, and 12.00 deg for straight and curved path procedures

were used. All maneuvers were tracked by ground based tracking systems.

This report documents the results of this activity. It describes the flight test and evaluation methodology and addresses technical as well as operational issues. It provides static and graphical analysis of pilot performance along with a discussion of pilot subjective opinions concerning the acceptability and perceived workload, safety, and control margins associated with the procedures flown. The results of this work will be considered in the future modifications of the FAA Heliport Design Advisory Circular, AC 150/5390-2. (FR)

AN (1) AD-A200 559/XAG

FG (2) 010500

040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of Enhancements to the Low Level Wind Shear Alert System (LLWAS) at Stapleton International Airport.

DN (9) Final rept. Jul 87-Mar 88

AU (10) Barab, John D.

Page, Richard D.

Rosenburg, Bruce L.

Zurinkas, Thomas E.

Smythe, Glenn R.

RD (11) Aug 1988

PG (12) 155 Pages

RS (14) DOT/FAA/CT-88/6

RN (18) DOT/FAA/PS-88/14

RC (20) Unclassified report

NO (21) Prepared in collaboration with Data Transformation Corp.

DE (23) *WIND SHEAR, *WARNING SYSTEMS

AIR TRAFFIC CONTROL SYSTEMS, ALGORITHMS, CATHODE RAY TUBE

SCREENS,

CATHODE RAY TUBES, COLORADO, CONTROL, DETECTION, FALSE ALARMS,

FORMATS,

HAZARDS, HUMAN FACTORS ENGINEERING, INTERNATIONAL AIRPORTS,

MESSAGE

PROCESSING, METEOROLOGICAL DATA, OPERATIONAL EFFECTIVENESS,

PILOTS,

RATES, TEST AND EVALUATION, WIND

ID (25) *LLWAS(Low Level Wind Shear Alert System), Stapleton International Airport

AB (27) An operational test and evaluation of enhancements to the 11-station Low Level Wind Shear Alert System (LLWAS) at Stapleton International

Airport, Denver, Colorado, was conducted during the period August 3 to September 4, 1987. Enhancements included a 12th remote station for gathering wind data, a more sophisticated wind shear microburst detection (WSMD) algorithm, a Digital Equipment Corporation (DEC) PDP 11-73 computer, a DEC VT-240 Cathode Ray Tube (CRT) Display, and an LLWAS message display format, the latter two for local controller use in the air traffic control (ATC) tower cab. Two sets of objectives were associated with this LUWAS evaluation: meteorological objectives, which stressed determining the effectiveness of the WSMD algorithm in establishing the presence of hazardous wind shears on or near the airport and reducing the false alarm rate; and human factors objectives, which were concerned with evaluating the usefulness and effectiveness of the CRT display, the display message, and the local controller's message to pilots. This report discusses the methodology and dual scientific analyses carried out, and provides detailed results with conclusions and recommendations. Based on the conclusions, it was recommended that the WSMD algorithm remain as an operational constituent of the Denver LUWAS and that human factors considerations be further explored in improving the controller LUWAS interface. (FR)

AN (1) AD-A214 085/XAG
FG (2) 010500

130100
010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Helicopter Visual Segment Approach Lighting System (HALS) Test Report.

DN (9) Technical note

AU (10) Billmann, Barry R.
Shollenberger, Scott

RD (11) Aug 1988

PG (12) 318 Pages

RS (14) DOT/FAA/CT-TN89/21

RC (20) Unclassified report

DE (23) *LANDING LIGHTS, *APPROACH LIGHTS

CLOSURES, HELIPORTS, PILOTS, RATES, WORKLOAD, HELICOPTERS, VISUAL PERCEPTION

AB (27) This Technical Note reports on a test designed to obtain pilot performance subjective pilot data on the Helicopter Visual Segment Approach Lighting System (HALS). Results identify the performance measures which correlate with the pilot's ability to visually acquire a HALS equipped heliport. Conclusions state that HALS can support existing minima to heliports. Pilots reported unacceptable

Cooper-Harper ratings for rate of closure and workload without HALS. (sdw)

AN (1) AD-A214 093/XAG

FG (2) 250400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Testing and Evaluation of Low Data Rate Voice CODEC Equipment.

DN (9) Technical note

AU (10) Dehel, Thomas
Grable, Marcus
Child, Joseph

RD (11) Aug 1988

PG (12) 43 Pages

RS (14) DOT/FAA/CT-TN89/49

RC (20) Unclassified report

DE (23) *CODERS, *DECODERS, *DIGITAL COMMUNICATIONS, *VOICE COMMUNICATIONS

AERONAUTICS, AIR TRAFFIC CONTROL SYSTEMS, AIR TRAFFIC CONTROLLERS, ARTIFICIAL SATELLITES, BACKGROUND NOISE, CODING, DATA RATE, ERRORS, INTELLIGIBILITY, LOW RATE, MOBILE, RATES, TEST AND EVALUATION

ID (25) CODEC(Coders Decoders)

AB (27) The FAA is currently evaluating low rate voice digitizing coder/decoder (CODEC's) for use with the Aeronautical Mobile Satellite Service (AMSS). Phase II of this evaluation consisted of air traffic control (ATC) personnel participating in an objective intelligibility test of several CODEC's under operational conditions. The results of the testing show that the intelligibility of the low rate 4.8 kilobits per second (kbps) CoDEC's is essentially equivalent to the intelligibility of the 9.6 kbps CODEC. The results also show that the 4.8 kbps CODEC's can operate with high intelligibility under conditions of high bit error rates and operational background noise. Keywords: Air traffic controllers; Digital voice communications; Voice coding. (EDC)

AN (1) AD-A199 063/XAG

FG (2) 210500

010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Statistics on Aircraft Gas Turbine Engine Rotor Failures that Occurred in U.S. Commercial Aviation During 1982.

DN (9) Final rept.

AU (10) DeLucia, R. A.
Salvino, J. T.
RD (11) Jul 1988
PG (12) 42 Pages
RS (14) DOT/FAA/CT-88/23
RC (20) Unclassified report
DE (23) *AVIATION SAFETY, *GAS TURBINE ROTORS
AIR TRANSPORTATION, ROTOR BLADES, CLIMBING, COMMERCIAL AVIATION,
COST
ANALYSIS, COST EFFECTIVENESS, DATA PROCESSING, FAILURE(MECHANICS),
FLIGHT, FRAGMENTS, CONTAINMENT(GENERAL), HAZARDS, REGULATIONS,
TAKEOFF
AB (27) This report presents statistics relating to gas turbine engine rotor failures which occurred during 1982 in U. S. commercial aviation service use. One-hundred and sixty-one rotor failures occurred in 1982. Rotor fragments were generated in 88 of the failures and, of these, 16 were uncontained. The predominant failure involved blade fragments. Seventy percent of the 161 failures occurred during the takeoff and climb stages of flight. This service data analysis is prepared on a calendar year basis and published yearly. The data support flight safety analysis, proposed regulatory actions, certification standards, and cost benefit analyses. Keywords: Air transportation; Hazards; Aviation safety; Gas turbine engine rotor; Failure containment. (edc)

AN (1) AD-A199 177/XAG
FG (2) 050900
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Studies of Poststrike Air Traffic Control Specialist Trainees: 2.
Selection and Screening Programs
AU (10) Manning, Carol A.
Kegg, Pamela S.
Collins, William E.
RD (11) Jul 1988
PG (12) 25 Pages
RS (14) DOT/FAA/AM-88/3
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROLLERS, *PERSONNEL SELECTION, *TRAINING
AERONAUTICS, APTITUDE TESTS, COST EFFECTIVENESS, IMPACT,
INSTRUCTIONS,
PSYCHOLOGISTS, RADAR, SELECTION, VALIDATION

AB (27) Specific contributions of aviation psychologists to the selection and Academy training of FAA air traffic control specialists are presented in an historical context. Research results which formed the basis for the written aptitude selection tests, The Occupational Knowledge Test (for assessing prior experience), and the pass/fail screens for the Academy's nonradar and radar programs are noted. Results of continuing validation research on all aspects of these selection/screening programs are presented in detail as well as the means by which the results are used to (i) predict training and performance outcomes, (ii) model the impact of program changes (iii) allow the introduction of changes (improvements) without compromising the validity of the programs, and (iv) assure compliance with the Uniform Guidelines on Employee Selection Procedures. The application of this line of research has produced considerable cost/benefits to the agency. (SDW)

AN (1) AD-A199 309/XAG
FG (2) 010300
140200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Longitudinal Impact Test of a Transport Airframe Section.
DN (9) Final rept. Feb-Oct 87
AU (10) Johnson, Richard
Wade, Barry
RD (11) Jul 1988
PG (12) 291 Pages
RS (14) DOT/FAA/CT-87/26
CT (15) DTFA03-87-C-00013
RC (20) Unclassified report
DE (23) *AIRFRAMES, *IMPACT TESTS
ACCELERATION, CRASHES, DEFLECTION, DYNAMIC LOADS, FLOORS,
FUSELAGES,
INSTALLATION, INSTRUMENTATION, LOADS(FORCES), MEASUREMENT, PEAK
VALUES,
RESPONSE, SEATS, SIMULATION, TEST EQUIPMENT, TRANSPORT, TRANSPORT
AIRCRAFT
AB (27) This report presents the results of longitudinally impact testing a 10-foot section of a transport airplane at peak acceleration and corresponding velocity changes of 7.4g (22.4 ft/sec) and 14.2g (36 ft/sec), respectively. The purpose of the tests was to measure the responses of the fuselage and floor structure to simulated dynamic crash loads. The airframe test section included a full complement of seats and dummies. Acceleration and load/deflection response

measurements were obtained from the instrumented fuselage, floor and seat/dummy installation. (sdw)

AN (1) AD-A196 032/XAG

FG (2) 170700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Loran C Coverage in Alaska after Dual Rating Port Clarence.

DN (9) Technical note for period ending Jun 87

AU (10) Erikson, Robert H.

RD (11) Jun 1988

PG (12) 38 Pages

RS (14) DOT/FAA/CT-TN88/22

RC (20) Unclassified report

DE (23) *CHAINS, *LORAN

ALASKA, FLIGHT TESTING, GULFS, RATINGS, STATIONS

AB (27) This report describes flight tests conducted by the Federal Aviation Administration (FAA) Technical Center to measure Loran C coverage in Alaska. The flight tests were conducted within the state of Alaska after Loran C station Port Clarence was added to the Gulf of Alaska chain by dual rating the station. Flight tests were conducted in June 1987. Keywords: Loran C, Alaska, and Port Clarence, Alaska. (RH)

AN (1) AD-A196 564/XAG

FG (2) 250200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aircraft Position Report Demonstration Plan

AU (10) Grelis, Joan

RD (11) Jun 1988

PG (12) 12 Pages

RS (14) DOT/FAA/CT-TN88/21

RC (20) Unclassified report

DE (23) *SATELLITE COMMUNICATIONS, *AIR TRAFFIC CONTROL SYSTEMS, *FLIGHT SIMULATORS, *FLIGHT TRAINING, *TRAINING DEVICES
AIR TO SPACE, AIRCRAFT, AUTOMATIC, AVIONICS, DEMONSTRATIONS,

GROUND

STATIONS, LAND AREAS, POSITION(LOCATION), RADAR, RELAYS, REPORTS, SIGNALS, SURVEILLANCE, TELEMETERING DATA, AIR CONTROL CENTERS,

DATA

LINKS

AB (27) This plan describes the Aircraft Position Report Demonstration which was designed to implement and verify an aircraft/satellite data link for aircraft position reports. The demonstration will implement the Automatic Dependent Surveillance (ADS) function which will provide frequent aircraft position updates for oceanic flights outside the coverage of land based radar. Aircraft equipped with satellite communication avionics will transmit position reports to a satellite which will relay signals to a ground receiving station. From the ground station, the messages will be sent via the Aeronautical Radio, Inc. (ARINC) network to the Federal Aviation Administration (FAA) Technical Center at the Atlantic City International Airport. The position reports will be processed and displayed on a map showing routes, sectors, and fixes at the FAA Technical Center and a remote processor and display will allow demonstrations to be viewed at Air Route Traffic Control Centers. (sdw)

AN (1) AD-A196 582/XAG

FG (2) 210400

010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Alternate Fuels for General Aviation Aircraft with Spark Ignition Engines.

DN (9) Final rept.

AU (10) Ferrara, Augusto M.

RD (11) Jun 1988

PG (12) 95 Pages

RS (14) DOT/FAA/CT-88/05

RC (20) Unclassified report

DE (23) *AIRCRAFT ENGINES, *FUELS, *RECIPROCATING ENGINES, *SPARK IGNITION ENGINES, *SUBSTITUTES

ACCELERATED TESTING, AIRCRAFT, ALCOHOLS, CARBINOLS, CIVIL AVIATION, COMPATIBILITY, DYNAMOMETERS, ENGINES, GASOLINE, LITERATURE

SURVEYS,

OILS, TEST METHODS, VAPOR LOCK

AB (27) This report describes the results of a study into the behavior of several alternate fuels that are under consideration for use in general aviation aircraft engines. The study consisted of a literature search and engine tests using a dynamometer. The literature search identified material compatibility problems and possible solutions to these problems. For the engine tests, a number of gasoline/alcohol blends were prepared using both ethanol and methanol in varying concentrations and the vapor lock behavior was identified. Neat alcohols and

methyl-tertiary-butyl ether were also used in the engine and special operational conditions and problems were identified.

AN (1) AD-A198 975/XAG

FG (2) 170700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Loran C TSO Data Base.

DN (9) Technical note Feb 87-Jan 88

AU (10) Evans, Jean

Bernheisel, Robert

Dickinson, Mark

Wisser, Thomas

Wortham, Martin

RD (11) Jun 1988

PG (12) 124 Pages

RS (14) DOT/FAA/CT-TN88/1

RC (20) Unclassified report

DE (23) *LORAN, *TEST EQUIPMENT, *COMPUTER AIDED DIAGNOSIS

ACCURACY, ADVISORY ACTIVITIES, AIRCRAFT, CHAINS, CIRCULAR, DATA BASES,

FLIGHT TESTING, POSITION(LOCATION), RADIO NAVIGATION, TERMINAL HOMING,

TEST METHODS

ID (25) Loran C

AB (27) This report lists a data base for bench simulation testing aviation Loran C receivers for en route and terminal position accuracy. A set of data points was selected from Loran C stability flight tests conducted over the continental U.S. in 1984-1985 at 400 locations, 100 points in each of four Loran C chains. It may someday be used as a substitute for some of the flight testing required in an Advisory Circular or Technical Standard Order to obtain a Supplemental Type Certificate for Loran C equipment for en route and terminal aircraft operations. The report also discusses the procedures used to collect and select the data base. Keywords: Test equipment, Test methods, Radio navigation. (kr)

AN (1) AD-A200 027/XAG

FG (2) 010600

010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Heliport Visual Approach Surface High Temperature and High Altitude Test Plan.

DN (9) Technical note Oct-Dec 87

AU (10) Plotka, Marvin S.

Weiss, Rosanne M.

RD (11) Jun 1988

PG (12) 28 Pages

RS (14) DOT/FAA/CT-TN88/5

RC (20) Unclassified report

NO (21) See also Rept. no. DOT/FAA/CT-TN/87/54.

DE (23) *HELICOPTERS, *APPROACH, *VISUAL FLIGHT RULES

AIR SPACE, DATA ACQUISITION, HIGH ALTITUDE, HIGH TEMPERATURE,

IDENTIFICATION, WEATHER, HELIPORTS, PLANNING, PROTECTION,

REQUIREMENTS

AB (27) The purpose of this test plan on Helicopter Visual Meteorological Conditions (VMC) Clearance project to be conducted at high temperature and high altitude conditions are as follows: (a) The identification of problems to be investigated; (b) The definition of the tasks required to resolve these problems; (c) The development of test procedures; (d) The description of the methodology for data collection, reduction, and analysis; (e) The specification of the required data. The focus of this test is on the issue of airspace requirement and obstruction protection requirements for visual approaches and departures at a heliport. (FR)

AN (1) AD-A202 615/XAG

FG (2) 010600

010300

010400

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) National Airspace System Plan: Facilities, Equipment, Associated Development and Other Capital Needs.

RD (11) Jun 1988

PG (12) 364 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AVIATION SAFETY, *CIVIL AVIATION

AERONAUTICS, AGING(MATERIALS), AIR SPACE, COMMUNICATION AND RADIO

SYSTEMS, COSTS, DATA PROCESSING, FLIGHT, PLANNING, REDUCTION,

SATELLITE

COMMUNICATIONS, SOLUTIONS(GENERAL), SURFACE TO AIR, UNITED STATES

GOVERNMENT, VOICE COMMUNICATIONS, WEATHER

AB (27) This is the the sixth annual update of the NAS Plan. The Plan addresses the compelling problems of how best to improve safety and efficiency,

accommodate spiraling demands for aviation services, deal with the problems of aging or obsolete facilities, recognize and users desires for minimal restrictions on the use of the airspace, allow for a reduced Federal role, and create a foundation for continued evolution which exploits newer technologies and developments obtained through continuing research. The recurring theme throughout the Plan is that the solution lies in greater use of automation, consolidations of major facilities, and application of cost effective technological solutions. Topics of interest included in this update follow: Demand on the System; Air Traffic Control System - En Route, Terminal, and Flight Service and Weather; Ground-to-Air Systems; Interfacility Communications Systems; Maintenance and Operations Support Systems; Other Capital Needs; and Transition. Keywords: Voice communications, Aviation safety; Satellite communications; Data processing. (AW)

AN (1) AD-A194 331/XAG

**FG (2) 130200
010500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Design of Overlays for Rigid Airport Pavements.

DN (9) Final rept.

AU (10) Rollings, Raymond S.

RD (11) Apr 1988

PG (12) 277 Pages

CT (15) DTFA01-81-Y-10523

RN (18) DOT/FAA/PM-87/19

RC (20) Unclassified report

DE (23) *PAVEMENTS, *LANDING FIELDS

AIRPORTS, CONCRETE, FAILURE(MECHANICS), CRACKING(FRACTURING),

COST

**ANALYSIS, LIFE CYCLE COSTS, STRESSES, FATIGUE(MECHANICS), OVERLAYS,
DAMAGE, TRAFFIC**

AB (27) Existing rigid and flexible overlay pavement design methods are empirical, and they use specified level of cracking or visual deflection as the defined failure condition. The existing empirical designs are based on tests run 30 years ago, and current analytical models provide greatly improved abilities to examine the overlay pavement structure. Emphasis by many agencies on life-cycle cost analysis and more sophisticated maintenance and rehabilitation strategies require methods of predicting pavement performance rather than simply developing safe designs. A layered-elastic analytical model was selected to evaluate stresses from applied loads in the pavement structure. Pavement performance was measured in terms of a structural

condition index (SCI) which related the type, degree, and severity of pavement cracking and spalling on a scale of 0 to 100. Models were developed to represent the effect of cracking on the base pavement, and to account for the effects of substandard load transfer at slab joints. The predicted performance of rigid overlays and pavements using this analysis was checked against the results of full-scale acceleration traffic tests conducted by the Corps of Engineers and against current overlay design methods and was found to provide reasonable agreement.

AN (1) AD-A191 714/XAG

FG (2) 050900

010600

120300

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT**

SYSTEMS

TI (6) U.S. Civil Airmen Statistics 1987

AU (10) Carter, Patricia W.

RD (11) 31 Mar 1988

PG (12) 39 Pages

RC (20) Unclassified report

**DE (23) *AIR FORCE PERSONNEL, *AVIATION PERSONNEL, *CIVIL AVIATION,
*STATISTICAL DATA**

**AERONAUTICS, EXERCISE(PHYSIOLOGY), FLIGHT, INDUSTRIES, INSTRUCTORS,
MEDICAL EXAMINATION, MEDICINE, NAVIGATORS, OKLAHOMA, PILOTS,
STATISTICS, URBAN AREAS, AIR TRAFFIC CONTROLLERS**

AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active Airmen is one who hold both an airmen certificate and a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots, control tower operators, flight navigators, and lighter-than-air pilots are not required to have a medical examination but the numbers represent only those who had a valid instructors, and dispatchers certificates represent all certificates on record at the Aeronautical Center.

AN (1) AD-A196 628/XAG

FG (2) 230500

010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Study of Benefits of Passenger Protective Breathing Equipment from Analysis of Past Accidents.

DN (9) Final rept.

AU (10) Speitel, Louise
Hill, Richard G.

RD (11) Mar 1988

PG (12) 157 Pages

RS (14) DOT/FAA/CT-88/03

RC (20) Unclassified report

DE (23) *BREATHING APPARATUS, *PROTECTIVE EQUIPMENT ACCIDENTS, AVIATION ACCIDENTS, BLOCKING, COMPUTERIZED SIMULATION, CUSHIONING, FIRE SAFETY, FIRES, PASSENGERS, SEATS, TRANSPORT AIRCRAFT

AB (27) A computer model was developed and utilized for calculating the benefits of passenger protective breathing devices and other fire safety improvements based on an analysis of accidents involving fire occurring from 1966 to 1986. The results of exercising this model on 20 past accidents indicate that the 'lives saved' is very sensitive to assumptions. It was determined that seat cushion fire blocking (FB) would have saved almost half the lives. Floor proximity lighting (FPL) is much less effective than FB, saving 3-4 percent of fire deaths. Protective breathing equipment (PBE), assuming no donning delay and 100 percent usage by passengers, is more effective than FPL. However, a 15-second donning delay of PBE may have resulted in a net disbenefit. Keywords: Protective breathing equipment smoke hoods; Transport aircraft; Aviation accidents; Fire safety. (sdw)

AN (1) AD-A198 079/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PL ANS

TI (6) Terminal Area Forecasts; Fiscal Years 1988-2000.

RD (11) Mar 1988

PG (12) 433 Pages

RS (14) FAA-APO-88-3

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL TERMINAL AREAS FORECASTING, AIRPORT CONTROL TOWERS, GROUND CONTROLLED APPROACH RADAR,

AIRCRAFT INDUSTRY, MILITARY AIRCRAFT, AIR TRAFFIC CONTROL SYSTEMS, PLANNING PROGRAMMING BUDGETING

AB (27) This report contains forecasts of aviation activity for 847 airports in the United States for fiscal years 1988-2000. These include 399 airports with FAA air traffic control towers and radar approach control service and 14 FAA contract towers. For each airport, detailed forecasts are made for the four major users of the air traffic system: air carriers, air taxi/commuters, general aviation, and military. Summary tables contain national, FAA regional, and state aviation data and other airports specific highlights. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA headquarters and regional offices and to provide airport-specific information that can be used by state and local aviation authorities, the aviation industry, as a whole, and the general public. Keywords: Airport forecasts, Aviation activity, Terminal Area forecasts, Enplanements, Aircraft operations, Air carrier, Commuter, Air taxi, General aviation, Military aviation, (sdw)

AN (1) AD-A191 711/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PL ANS

TI (6) FAA Aviation Forecasts Fiscal Years 1988-1999.

RD (11) Feb 1988

PG (12) 195 Pages

RS (14) FAA-APO-88-1

RC (20) Unclassified report

DE (23) *CIVIL AVIATION

AIR TRANSPORTATION, AIRCRAFT INDUSTRY, AIRPORTS, COSTS, ECONOMICS, FLIGHT, FORECASTING, FUELS, GROWTH(GENERAL), HELICOPTERS,

PLANNING, STATIONS

ID (25) *General aviation

AB (27) This report contains the Fiscal Years 1988-1999 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the National Aviation System: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry, and by

the general public. The overall outlook for the forecast period is for continued economic growth, rising real fuel prices, and moderate inflation. Based upon these assumptions, aviation activity by fiscal year 1999 is forecast to increase by 33.4 percent at towered airports, 33.5 percent at air route traffic control centers, and 11.7 percent in flight services performed. Hours flown by general aviation are forecast to increase 6.1 percent and helicopter hours flown, 33.3 percent. Scheduled domestic revenue passenger miles (RPM's) are forecast to increase 75.8 percent, with scheduled international RPM's forecast to increase by 81.3 percent, and regionals/commuters RPM's forecast to increase by 16.9 percent.

AN (1) AD-A193 416/XAG

FG (2) 120700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Host Computer System Capacity Management Procedures.

DN (9) Technical note for period ending 1987

AU (10) Watts, Norm
Connolly, Paul
Goettge, Robert

RD (11) Feb 1988

PG (12) 50 Pages

RS (14) DOT/FAA/CT-TN87/43

RC (20) Unclassified report

DE (23) *COMMUNICATIONS TRAFFIC, *SYSTEMS ANALYSIS, *SYSTEMS MANAGEMENT

ACQUISITION, CAPACITY(QUANTITY), LONG RANGE(TIME), MATHEMATICAL MODELS,

MEASUREMENT, MONITORING, PLANNING, WORKLOAD

ID (25) *Host computers

AB (27) The Federal Aviation Administration's Advanced Automation Program Office has recognized the need for monitoring and assessing the National Airspace System's operational performance and for long term planning during the life-cycle of the Host Computer System. The assessment of the operational performance involved the acquisition and analysis of field measurement data, while the long-term capacity planning entails execution of a Host Computer System analytical model using current and project traffic and other system loads. The procedures document defines the activities to be executed in: (1) measuring and monitoring operational performance, (2) measuring projecting system workloads, (3) predicting system performance using an analytical performance model, and (4) analyzing and reporting current

and predicted future performance of the Host Computer System.

AN (1) AD-A197 179/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) LORAN C Offshore Flight Following (LOFF) in the Gulf of Mexico.

DN (9) Technical note

AU (10) Lorge, Frank

RD (11) Feb 1988

PG (12) 68 Pages

RS (14) DOT/FAA/CT-TN88/8

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *LORAN

ACCESS, ACCURACY, AIR TRAFFIC CONTROLLERS, AIRCRAFT, AUTOMATIC, CHANNELS, CONVERTERS, DATA LINKS, DATA MANAGEMENT, DELAY, DISPLAY SYSTEMS, DYNAMICS, FLIGHT TESTING, FORMATS, LATITUDE, LONGITUDE, MEXICO

GULF, POSITION(LOCATION), RADAR, RADAR TARGETS, SIMULATION, SURVEILLANCE, TEST AND EVALUATION, TIME, VERY HIGH FREQUENCY, AREA COVERAGE, OFFSHORE, POSITION FINDING, TRACKING, COMPARISON

ID (25) LORAN C, LOFF(LORAN C Offshore Flight Following), Aircraft tracking, ADS(Automatic Dependent Surveillance), ARTCC(Air Route Traffic Control Centers), EDARC(Enhanced Direct Access Radar Channel)

AB (27) This report describes results of tests conducted by the FAA Technical Center to evaluate the LOFF system. Simulation and flight test were used to measure system performance under operational conditions. The LOFF system is the first implementation of Automatic Dependent Surveillance (ADS) by the FAA to track aircraft. It uses aircraft derived position as determined by Loran, transmitted by VHF data link for use by air traffic controllers. A converter unit was installed in the Houston Air Route Traffic Control Center (ARTCC) to process incoming LOFF messages and convert them into a radar data format. Results of this conversion are input to the Enhanced Direct Access Radar Channel (EDARC) which presents the aircraft as a conventional radar target. The system provides coverage in areas not currently served by radar, offshore in the Gulf of Mexico. Simulated inputs were used during testing to determine accuracy of the LOFF converter, to measure timing delays, and to relate aircraft position in latitude/longitude to a displayed position as seen by the controller. Flight tests were conducted to determine VHF coverage using the system, to measure Loran accuracy in the area, to compare dynamic performance with nondynamic performance of the EDARC system, and to provide an

overall evaluation of the operational system. Overall results of the LOFF test program were favorable. The system performs in a predictable and reasonable manner and is comparable to that of radar, although there is a slight difference in accuracy between the two. (edc)

AN (1) AD-A190 641/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) An Evaluation of the Effects of High Visual Taskload on the Separate Behaviors Involved in Complex Monitoring Performance

AU (10) Thackray, Richard I.

Touchstone, R. M.

RD (11) Jan 1988

PG (12) 16 Pages

RS (14) DOT/FAA/AM-88/1

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *BEHAVIOR, *MONITORING, *VIGILANCE AIRCRAFT, ALPHANUMERIC DATA, ALTITUDE, DETECTION, INFORMATION PROCESSING, LABORATORIES, LABORATORY TESTS, LOSSES, PERFORMANCE(HUMAN),

SIMULATION, STIMULI, TARGETS, TIME, TRACKING, ATTENTION

AB (27) Operational monitoring situations, in contrast to typical laboratory vigilance tasks, generally involve more than just stimulus detection and recognition. They frequently involve complex multidimensional discriminations, interpretations of significance, decisions as to appropriate action, implementation of action, and evaluation of consequences. A simulated air traffic control (ATC) task was developed to study the effects of prolonged monitoring on a number of such behaviors embedded in the context of the task. All subjects performed the task under relatively high visual taskload conditions for a single 120-min session. The results revealed that time to detect aircraft at the same altitude increased significantly over the monitoring period as did omission errors for this type of event. Detection time for the more readily detectable alphanumeric changes involving loss of altitude information showed no evidence of impairment, nor was any impairment found for any of the other task behaviors that were measured. The findings are discussed with reference to previous studies suggesting that complex monitoring primarily affects attentional processes and that the rate of decline in attention appears to be related to the degree of information processing required for event detection.

Keywords: Air traffic control, Attention, Automation, Monitoring,

Performance, Vigilance, Short term memory, Target tracking, Laboratory tests, Fatigue.

AN (1) AD-A190 642/XAG

FG (2) 061100

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Age, Alcohol, and Simulated Altitude: Effects on Performance and Breathalyzer Scores

AU (10) Collins, William E.

Mertens, Henry W.

RD (11) Jan 1988

PG (12) 20 Pages

RS (14) DOT/FAA/AM-88/2

RC (20) Unclassified report

DE (23) *ALCOHOL CONSUMPTION, *PERFORMANCE(HUMAN), *STRESS(PHYSIOLOGY)

ADVERSE CONDITIONS, AGING(PHYSIOLOGY), ALTITUDE, BLOOD, GASES, GROUND

SIMULATION, LEVEL, INTERACTIONS, INTOXICATION, MIXTURES, OXYGEN MASKS,

PHYSIOLOGICAL EFFECTS, RESPONSE(BIOLOGY)

ID (25) Breathalyzers

AB (27) Trained men in two groups, 30-39 (n=12) and 60-69 (n=13), each performed at the Multiple Task Performance Battery (MTPB) in four separate full-day sessions with and without alcohol (2.2 mL of 100-proof vodka per kg of body weight) at ground level and at a simulated altitude of 12,500 ft (3810 m). Subjects breathed appropriate gas mixtures through oxygen masks at both ground level and altitude. Mean breathalyzer readings peaked near 88 mg % and did not differ between age groups or altitude conditions. Younger subjects performed better than older subjects; performance of both age groups was significantly impaired by alcohol, but these adverse effects were greater for the older subjects. No significant effects on performance were obtained due to altitude or to the interaction of altitude with alcohol. These results and those from several other studies suggest that prevalent views regarding the nature of the combined effects of alcohol and altitude on blood levels and on performance need to be redefined. Keywords: Intoxication, Performance(Human).

AN (1) AD-A191 720/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Optimization of the Dilation Characteristic on the Control Jurisdiction
of an Area Control Facility.

DN (9) Technical note
AU (10) Mulholland, Robert G.
RD (11) Jan 1988
PG (12) 65 Pages
RS (14) DOT/FAA/CT-TN87/39
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS
AIR SPACE, AIRCRAFT, CONTROL, CONTROL CENTERS, EARTH MODELS,
ELLIPSOIDS, FACILITIES, FUNCTIONS, GEOIDS, IMAGES, MODELS,
SEPARATION,
SPHERES, STANDARDS, SURFACES, TANGENTS

ID (25) *Dilation(Air Traffic Control), *Stereographic representation

AB (27) In an air traffic control environment such as the National Airspace
System the control function is based on stereographic representations
of aircraft positions in a plane tangent to a sphere with a center
collocated with the center of an ellipsoidal model of the geoid. The
variation of the dilation (i.e., the discrepancy between the length of
an infinitesimal arc on the model surface and the image of the arc in
the plane) over the control jurisdiction of an air traffic control
facility is one of many factors that adversely affect the ability of
the facility to maintain separation standards. Techniques are disclosed
for selecting a tangency point and a radius for the spherical support
of the stereographic plane that minimize the variation of the dilation
over the control jurisdiction about a predetermined constant. The
constant can be viewed as a specification of the scale of the map that
is the stereographic image in the plane of the portion of the surface
of the earth model underlying controlled airspace.

AN (1) AD-A191 721/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Microwave Landing System Mathematical Modeling Study for Midway Airport
Runway 22L, Chicago, Illinois.

DN (9) Technical note Aug-Oct 87
AU (10) Jones, Jesse D.
Epstein, Linda

RD (11) Jan 1988
PG (12) 65 Pages
RS (14) DOT/FAA/CT-TN87/49
RC (20) Unclassified report
DE (23) *MICROWAVE LANDING SYSTEMS
ANGLES, ERRORS, ILLINOIS, MATHEMATICAL MODELS, MULTIPATH
TRANSMISSION,
PLOTTING, SEPARATION, SHADOWS, RADIO WAVES, AIRPORTS
ID (25) Midway airport
AB (27) This technical note describes microwave landing system (MLS)
mathematical modeling performed for runway 22L, Midway Airport,
Chicago, Illinois. This study considered multipath and shadowing
effects of buildings and aircraft. Results are provided as plots
showing the multipath levels and separation angles and error plots
showing the resultant errors. Keywords include: Midway airport, MLS,
Microwave landing system, and Mathematical modeling.

AN (1) AD-A208 200/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Accomplishments under the Airport Improvement Program: Fiscal Year
1988.

DN (9) Annual rept. no. 7 for Fiscal Year ending 30 Sep 88
AU (10) Hetsko, Jean
RD (11) 1988
PG (12) 123 Pages
RS (14) DOT/FAA/RP-89-3
RC (20) Unclassified report
DE (23) *PLANNING PROGRAMMING BUDGETING, *AIRPORTS
GRANTS, AIR TRANSPORTATION, CONGRESS, FEDERAL BUDGETS, FEDERAL
LAW,
COMMERCIAL AVIATION
ID (25) AIP(Airport Improvement Program)

AB (27) Section 521 of the Airport and Airway Improvement Act of 1982 (Public
Law 97-248) requires that the Secretary of Transportation submit an
annual report to Congress describing the accomplishment of the Airport
grant program. This report covers activities for the fiscal year ending
September 30, 1988. Keywords: Report of accomplishments, Airport
improvement program. (sdw)

AN (1) AD-A211 338/XAG

FG (2) 010500

170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) FAA Air Traffic Activity: Fiscal Year 1988.

RD (11) 1988

PG (12) 200 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS

CONTROL CENTERS, FLIGHT, STATIONS, AIRPORT CONTROL TOWERS,
TERMINAL

FLIGHT FACILITIES

ID (25) Approach control

AB (27) This report furnishes terminal and en route air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), Approach Control Facilities, and FAA contract-operated towers. These reports are used as a guide in determining the need for larger or additional facilities, and possible increases in personnel at existing facilities. (SDW)

AN (1) AD-A213 048/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL
AVIATION**

SECURITY

TI (6) Criminal Acts against Civil Aviation, 1988.

RD (11) 1988

PG (12) 34 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *CRIMES

ACCURACY, AIR TRANSPORTATION, AIRCRAFT, AIRCRAFT HIJACKING,
AIRPORTS,

ATTACK, BOMBING, CONTROL, EXPLOSIONS, MEDIA, RECORDS, SECURITY,
SOURCES, THREATS, UNITED STATES

AB (27) The Federal Aviation Administration's Office of Civil Aviation Security maintains records of aircraft hijackings, bombing attacks, and other significant criminal acts against civil aviation worldwide. These records include actual and attempted hijackings; explosions aboard aircraft, at airports, and at airline offices; and other selected criminal acts against civil aviation. These offenses represent serious threats to the safety of civil aviation and, in those incidents

involving U.S. air carriers or facilities outside the United States, are often intended as symbolic attacks against the United States. Hijacking incidents are viewed within the context of the Federal criminal statute (49 USC 1472(B)) Which defines air piracy as any seizure or exercise of control, by force or violence or threat of force or violence, or by any form of intimidation, and with wrongful intent, of any aircraft. There is no attempt made in this report to differentiate between an act of air piracy and an attempted act of air piracy. the information contained in this publication is derived from a variety of government and media sources; however, in many cases specific details of a particular incident may not be available, especially those occurring outside the United States. While the Federal Aviation Administration makes every effort to provide complete and accurate information, it is not always possible to verify accounts of some events used in this publication. This edition summarizes events which occurred during 1988 and places the events in perspective within a 5-year period. (KR)

AN (1) AD-A220 144/XAG

FG (2) 010300

010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) General Aviation Activity and Avionics Survey.

DN (9) Annual summary rept. for CY 1988.

RD (11) 1988

PG (12) 322 Pages

RC (20) Unclassified report

DE (23) *AVIONICS, *CIVIL AVIATION

AIRCRAFT, AIRFRAMES, ENGINES, FLIGHT, FUEL CONSUMPTION, FUELS,
REGIONS,
SURVEYS, UNITED STATES

AB (27) This report presents the results of the annual General Aviation Activity and Avionics Survey. The survey is conducted by the FAA to obtain information on the activity and avionics of the United States registered general aviation aircraft fleet. The report contains breakdowns of active aircraft, annual flight hours, average flight hours and other statistics by manufacturer/model group, aircraft type, state and region of based aircraft, and primary use. Also included are fuel consumption, lifetime airframe hours, avionics, engine hours and miles flown estimates, tables for detailed analysis of the avionics capabilities of the general aviation fleet, estimates of the number of

landings, IFR hours flown, and grade of fuel consumed by the GA fleet.
(KR)

AN (1) AD-A220 440/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Census of U.S. Civil Aircraft: Calendar Year 1988.

RD (11) 1988

PG (12) 344 Pages

RS (14) FAA-AMS-420

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *TRANSPORT AIRCRAFT

AIR TRANSPORTATION, AIRCRAFT, AIRCRAFT INDUSTRY, COMMERCIAL
AIRCRAFT,

GENERAL AVIATION AIRCRAFT, INVENTORY, PASSENGER AIRCRAFT,
STATISTICAL

DATA, TABLES(DATA)

AB (27) This report presents information about the U.S. civil aircraft fleet .

It includes detailed tables of air carrier aircraft and an inventory of
registered aircraft by manufacturer and model, and general aviation
aircraft by state and county of the owner. Keywords: Air carriers;
Civil aviation; Commercial aircraft; Transport aircraft; General
aviation aircraft; Statistical data; Tables data; Registered aircraft.
(edc)

AN (1) AD-A220 798/XAG

FG (2) 010309

050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) FAA Statistical Handbook of Aviation: Calendar Year 1988.

RD (11) 1988

PG (12) 185 Pages

RC (20) Unclassified report

DE (23) *AERONAUTICS, *HANDBOOKS, *STATISTICAL DATA

AIR TRAFFIC, AIR TRANSPORTATION, AIRPORTS, AVIATION ACCIDENTS,
CARGO,

CIVIL AVIATION, COMMERCIAL AIRCRAFT, COMMERCIAL AVIATION, FACILITIES,
NATIONS, PILOTS, PRODUCTION, WORKLOAD

AB (27) The FAA Statistical Handbook of Aviation is published annually by the
Federal Aviation Administration (FAA). Its prime purpose is to serve as

a convenient source for historical data and to assist in evaluating
progress. The Handbook should provide a valuable source of information
for the Department of Transportation (DOT), operating offices of the
FAA, the Research and Special Programs Administration (RSPA), and other
government agencies, as well as nongovernment organizations interested
in aviation. Chapter I deals with the FAA and its functions. National
Airspace System data reflecting the fiscal and calendar year workload
of the FAA air traffic facilities-terminal and en route-are contained
in Chapter II. Selected statistics concerning the Nation's airport
facilities are presented in Chapter III by state within FAA regions.
Keywords: Federal aviation administration; Air transportation, Civil
aviation, Commercial aviation, National airspace system, Air traffic
facilities, Airport facilities, Airline passenger, Cargo, Freight, U.S.
civil air carrier, Civil airmen, Aircraft accidents, Aircarrier,
Commuters, Air taxis, Aeronautical production, Imports/exports,
Research and Special Programs(RSPA). (jg)

AN (1) AD-A195 282/XAG

FG (2) 010200

010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL
AVIATION**

SECURITY

**TI (6) Semiannual Report to Congress on the Effectiveness of the Civil
Aviation Security Program.**

DN (9) Recurring rept. 1 Jul-31 Dec 87.

RD (11) 31 Dec 1987

PG (12) 42 Pages

RS (14) DOT/FAA-ACS-88-1(27)

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *SECURITY, *AVIATION SAFETY

AIRCRAFT HIJACKING, BOMBS, COMMERCIAL AVIATION, CRIMES,
PASSENGERS,

SABOTAGE, THREATS

AB (27) The report includes an analysis of the current threat against civil
aviation along with information regarding hijacking attempts, security
incidents, bomb threats, and passenger screening activity. It also
summarizes ongoing activities to assure adequate protection of civil
air commerce against hijacking/sabotage and related crimes, and other
aspects of the Civil Aviation Security Program.

AN (1) AD-A196 626/XAG

FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS
TI (6) Census of U.S. Civil Aircraft: Calendar Year 1987.
DN (9) Annual rept.
RD (11) 31 Dec 1987
PG (12) 346 Pages
RS (14) FAA-AMS-420
RC (20) Unclassified report
DE (23) *AIR TRANSPORTATION
AIRCRAFT, AIRCRAFT INDUSTRY, CIVIL AVIATION, INVENTORY, PASSENGER
AIRCRAFT
AB (27) This report presents information about the U.S. civil aircraft fleet.
It includes detailed tables of air carrier aircraft and an inventory of
registered aircraft by manufacturer and model, and general aviation
aircraft by state and county of the owner. Keywords: Air carrier,
General aviation, Registered aircraft. (sdw)

AN (1) AD-A199 186/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Airport Activity Statistics of Certificated Route Air Carriers.
DN (9) Period ending 31 Dec 87.
RD (11) 31 Dec 1987
PG (12) 930 Pages
RC (20) Unclassified report
DE (23) *AIR TRANSPORTATION, *AIR TRAFFIC
AIRCRAFT, AIRPORTS, CARGO, DOMESTIC, INTERNATIONAL, POSTAL SERVICE,
STATISTICS, PASSENGER AIRCRAFT, SCHEDULING, AIR TRANSPORTATION,
AIRCRAFT, AIRPORTS, CARGO, DOMESTIC, INTERNATIONAL, POSTAL SERVICE,
STATISTICS
AB (27) This report furnishes airport activity of the large Certificated Route
Air Carriers. Included in the data contained in Table 6 are passenger
enplanements, tons of enplaned freight, express, and mail. Both
scheduled and non-scheduled service, and domestic and international
operations are included. These data are shown by airport and carrier.
Table 7 includes departure by airport, carrier and type of operation,
and type of aircraft. Keywords: Passenger enplanements, Departures,
Freight, Express, Mail, Scheduled service, Non-scheduled service,
Domestic, International. (sdw)

AN (1) AD-A188 421/XAG
FG (2) 010200
150300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL
AVIATION
SECURITY
TI (6) Effectiveness of the Civil Aviation Security Program.
DN (9) Semiannual rept. 1 Jan-30 Jun 87.
RD (11) Nov 1987
PG (12) 14 Pages
RS (14) DOT/FAA/ACS-87-1(26)
RC (20) Unclassified report
NO (21) Report of the Administrator of the Federal Aviation Administration to
Congress.
DE (23) *CIVIL AVIATION, *SECURITY, *COMMERCIAL AVIATION
ACCESS, AIR, AIR TRANSPORTATION, AIRPORTS, FOREIGN, HIGH RATE,
INTERNATIONAL, NATIONAL SECURITY, RISK, TERMINAL FLIGHT FACILITIES,
TRAVEL, UNITED STATES, AIRCRAFT HIJACKING, PASSENGERS, AVIATION
SAFETY
AB (27) This report presents a concise picture of the nationwide effectiveness
of the procedures used to screen passengers and their carry-on items
prior to boarding scheduled and public charter flights, as well as
visitors desiring access to air terminal passenger boarding areas. This
report also provides data on the initiatives being implemented as a
result of the review of domestic airport security by the Safety Review
Task Force. A summary is included of the assessments conducted by the
Federal Aviation Administration's Office of Civil Aviation Security to
determine the effectiveness of the security measures at foreign
airports served by U.S. air carriers, foreign airports from which
foreign air carriers serve the United States, foreign airports which
pose a high risk of introducing danger to international air travel, and
such other foreign airports as the Secretary of Transportation may deem
appropriate. In addition, this report includes a summary of the
activities of the Federal Air Marshals (FAM) program and the changes in
security measures which were instituted during this reporting period to
prevent or deter terrorist and other criminal acts against civil
aviation. Intensive basic and recurrent inservice training of these
special agents in FAM duties by the Federal Law Enforcement Training
Center Continues to assure their maintenance of skills critical to
performance of their highly specialized duties.

AN (1) AD-A188 801/XAG
FG (2) 010303

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Testing of the Engine Compartment Fire Extinguishing System in the F/EF-111 Aircraft.

DN (9) Final rept. Jul 86-Feb 87

AU (10) Chamberlain, George
Boris, Paul

RD (11) Nov 1987

PG (12) 72 Pages

RS (14) DOT/FAA/CT-TR87-21

PJ (16) 3058

TN (17) 07

RN (18) AFWAL-TR-87-2066

RC (20) Unclassified report

DE (23) *FIRE EXTINGUISHERS

AIRCRAFT, CONTROL, FIRE EXTINGUISHING AGENTS, FIRE PROTECTION, FLIGHT

ENVELOPE, FLOW, NACELLES, VENTILATION, JET FIGHTERS, ELECTRONIC AIRCRAFT, TURBOJET ENGINES, AIRCRAFT EQUIPMENT

ID (25) F-111 Aircraft, Halon, YTF-33 Engines, PE62203F, WUAFWAL30580783

AB (27) Tests were conducted at the FAA Air Blast Test Facility during which Halon 1202 or Halon 1301 was discharged into the nacelle of an F/EF-111 test article through the aircraft's on-board agent distribution system.

Various ground/flight conditions were simulated by providing controlled nacelle ventilating flows using by-pass air from a YTF-33 engine.

Preliminary test indicated that some advantage resulted using the more volatile Halon 1301 agent. Tests also revealed that using either agent, the current on-board nacelle fire extinguishing system does not meet the recommended minimum requirements for an acceptable system in a major portion of the aircrafts operational flight envelope. And finally, the test results indicate that a revision to Mil-E-22285 should be considered. Keywords: Fire extinguishing agents; Fire protection.

AN (1) AD-A190 948/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Temperature/Humidity Tolerance Index for Transporting Beagle Dogs in Hot Weather

AU (10) Hanneman, Gerald D.
Sershon, James L.

RD (11) Nov 1987

PG (12) 20 Pages

RS (14) DOT/FAA-AM-87/8

RC (20) Unclassified report

DE (23) *HOT WEATHER, *HEAT TOLERANCE

AIRCRAFT, ATMOSPHERIC TEMPERATURE, BODY TEMPERATURE, CATALYSTS, DOGS,

HUMIDITY, MALES, RECTUM, SAFETY, TEMPERATURE, HEAT STRESS(PHYSIOLOGY),

AIR TRANSPORTATION, EXPOSURE(PHYSIOLOGY)

ID (25) LPN-FAA-AM-B-82-VM-1, LPN-FAA-AM-E-80-VM-1, LPN-FAA-AM-B-81-VM-1

AB (27) Male beagle dogs were subjected to various hot air temperature/humidity

combinations in an attempt to develop a safe temperature/humidity index

for dogs being transported by aircraft. Only those environments in which all exposed dogs could maintain a rectal temperature less than 108 F during 6 hours of continuous exposure were considered safe.

Results from the experiments provided data to formulate an equation used in defining the tolerance index. Increasing the environment's humidity serves as a catalyst in decreasing a dog's tolerance to heat.

In order to offset the effects of an increase in air temperature

(starting at 85 F with a 90 percent relative humidity), relative humidity would need to be decreased by 4 percent for every 1 F rise in temperature. Changes in rectal temperature and behavior (barking and excessive movement) in relation to the exposure environment are presented and discussed.

AN (1) AD-A191 241/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Cessna 172 MLS (Microwave Landing System) Terminal Instrument

Procedures (TERPS) Approach Data Collection and Processing Data Report.

DN (9) Technical note Jun 86-Jun 87

AU (10) Pugacz, Edward J.

RD (11) Oct 1987

PG (12) 207 Pages

RS (14) DOT/FAA/CT-TN87/36

RC (20) Unclassified report

DE (23) AIRBORNE, TRACKING, DATA ACQUISITION, DATA BASES, FIXED WING AIRCRAFT,

GRAPHICS, PLOTTING, MICROWAVE LANDING SYSTEMS, PROCESSING, STATISTICAL

PROCESSES, AIRCRAFT, DATA BASES, DATA ACQUISITION, EXPERIMENTAL DATA,

FLIGHT TESTING, GROUND LEVEL, TRACKING, PROCESSING,
INSTRUMENTATION

ID (25) TERPS(Terminal Instrument Procedures)

AB (27) This report documents the approaches portion of the Fixed Wing Microwave Landing System (MLS) Terminal Instrument Procedures (TERPS) data collection and processing project using a Cessna 172 (C-172) aircraft. This is one part of the Fixed Wing MLS TERPS data collection and processing program being performed at the Federal Aviation Administration (FAA) Technical Center. The program was undertaken to collect flight test data in various aircraft to establish a data base for development of MLS TERPS criteria. Data were collected during both missed approaches and landings using glideslopes of 3 deg, 4 deg, and 5 deg with all flights being tracked by ground based tracking systems. Statistical processing was performed on both the airborne and tracker data, and various graphical plots were produced. The processed data were delivered to AVN-120 for inclusion in the MLS TERPS criteria development data base.

AN (1) AD-A191 719/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Rotorcraft TCAS (Traffic Alert and Collision Avoidance System) Evaluation Group 3 Results.

DN (9) Technical note Sep-Dec 85

AU (10) Rehmann, Albert J.

RD (11) Oct 1987

PG (12) 67 Pages

RS (14) DOT/FAA/CT-TN87/21

RC (20) Unclassified report

DE (23) *COLLISION AVOIDANCE, *WARNING SYSTEMS

ACCIDENTS, AVIATION SAFETY, COASTAL REGIONS, CONFIGURATIONS, EAST(DIRECTION), FLIGHT TESTING, HELICOPTERS, OPERATIONAL EFFECTIVENESS, PREVENTION, ROTARY WING AIRCRAFT, SAFETY, URBAN

AREAS

ID (25) TCAS(Traffic Alert and Collision Avoidance System)

AB (27) This report documents the operational flight test of a prototype Traffic Alert and Collision Avoidance System (TCAS) installed in a Sikorsky S-76 helicopter. The prototype TCAS, programmed to encompass the functions of a TCAS I, was flown to five east coast terminal cities, and operated along defined helicopter routes therein. The test results validated the minimum proposed TCAS I configuration. Further results recommend enhancements, to be included as options to improve

the usefulness of TCAS I. Keywords: Helicopter safety; Helicopter accident prevention; Aviation safety.

AN (1) AD-A185 916/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Pollution from Motor Vehicles and Aircraft at Stapleton International Airport (Abbreviated Report). Revision 2

AU (10) Segal, Howard M.

RD (11) Sep 1987

PG (12) 42 Pages

RS (14) FAA/EE-86-11-A-REV-2

RC (20) Unclassified report

NO (21) Revision 2 to report dated Dec 86. Supersedes Rept. no.

FAA/EE-86-11-A/REV-1, AD-A179 286.

DE (23) *AIR QUALITY, *AIR POLLUTION

AIRCRAFT, GROUND VEHICLES, IMPACT, INTERNATIONAL AIRPORTS, POLLUTANTS,

COLORADO, SCATTERING, CONCENTRATION(COMPOSITION)

ID (25) Stapleton International Airport, Denver(Colorado)

AB (27) The air quality impact of the proposed runway expansion program at Stapleton International Airport is determined in this report. The method of analysis is to model the dispersion of pollutants from motor vehicles and aircraft under both 1-hour and 8-hour worst case conditions. Results show that aircraft pollution concentrations are reduced and in some cases completely disappear when the new runways are added. This is caused primarily by a reduction in takeoff delays, which are major objective of the runway expansion program at the airport.

AN (1) AD-A188 540/XAG

FG (2) 200100

010301

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) International Civil Aviation Organization Committee on Aviation Environmental Protection: Helicopter Noise Measurement Repeatability Program.

DN (9) Final rept.

AU (10) Newman, J. S.

Locke, Maryalice
RD (11) Sep 1987
PG (12) 249 Pages
RS (14) FAA-EE-87-2
RC (20) Unclassified report
DE (23) *AIRCRAFT NOISE, *HELICOPTERS
ACOUSTIC MEASUREMENT, COMPARISON, INTERNATIONAL, LEVEL(QUANTITY),
NOISE, VARIATIONS, CIVIL AVIATION, AIRCRAFT INDUSTRY, FLIGHT TESTING
AB (27) The participating ICAO CAEP WG II nations set out to investigate the
degree of variability in test results of the existent helicopter noise
certification rule by conducting a multinational noise measurement
flight test program using a single, widely available helicopter, the
Bell 206L-1 (or the acoustically equivalent 206L-3). The HNMRP has
provided a large number of certifying authorities and industry
participants the opportunity to acquire experience in helicopter noise
certification and the opportunity to thoroughly test and review the
requirements of Chapter 8 and Appendix 4 of ICAO Annex 16 through
implementation experience. As a result of this experience,
recommendations for improvements and refinements to Annex 16 were
developed, and subsequently adopted as proposed amendments at the
CAEP/1 meeting in Montreal in June 1986. The HNMRP also provided ICAO
WG II the chance to review the inherent repeatability of noise levels
for a single helicopter model tested by different teams at different
locations. This report contains: a history of the HNMRP, a summary of
the multi-nation comparison data, and discussion of the results of the
program, including the refinements proposed for the international
helicopter noise certification standard. Future analytical
opportunities using HNMRP data are also discussed at the end of the
report.

AN (1) AD-A189 131/XAG

**FG (2) 170700
250200**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Alaska Loran C Probe Test Results.

DN (9) Technical note
AU (10) Erikson, Robert
Evans, Jean
Dickinson, Mark
Wisser, Thomas
Wortham, Martin
RD (11) Sep 1987

PG (12) 75 Pages
RS (14) DOT/FAA/CT-TN87/23
RC (20) Unclassified report
DE (23) *LORAN, *RADIO STATIONS
ALASKA, CHAINS, FLIGHT, FLIGHT TESTING, GULFS, MEASUREMENT,
NAVIGATION,
PROBES, RATES, RATINGS, SIGNALS, STRENGTH(GENERAL)
AB (27) This report describes a flight test probe into Alaska to determine the
extent of usable signals in space from Loran C stations Port Clarence,
Narrow Cape, and Tok, Alaska. Flight measurements indicated adequate
signal strength exists from the three Loran C stations over the routes
flown. Therefore, it is feasible to dual rate Port Clarence as a new
secondary in the Gulf of Alaska Loran C chain. Dual rating Port
Clarence will increase the area where Loran C navigation is possible by
providing proper chain structure. This largely increased area will be
located in the middle to southern interior of Alaska. The tests were
conducted in the summer of 1985 and in the winter of 1985/86.

AN (1) AD-A196 625/XAG

**FG (2) 010500
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

**TI (6) FAA (Federal Aviation Administration) Air Traffic Activity: Fiscal Year
1987.**

DN (9) Rept. for 1 Oct 86-30 Sep 87

AU (10) Trembley, Nancy

RD (11) 30 Sep 1987

PG (12) 230 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS

AIR TRAFFIC, CONTROL CENTERS, FLIGHT, INTERNATIONAL, STATIONS

AB (27) This report furnishes terminal and en route air traffic activity
information of the National Airspace System. The data have been
reported by the FAA-operated Airport Traffic Control Towers (ATCTs),
Air Route Traffic Control Centers (ARTCCs), Flight Service Stations
(FSSs), International Flight Service Stations (IFSSs), Approach Control
Facilities and FAA contract-operated control towers. (sdw)

AN (1) AD-A221 178/XAG

FG (2) 010301

010200

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Rotorcraft Master Plan.

RD (11) Sep 1987

PG (12) 170 Pages

RS (14) FAA-P-8100.1

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *HELICOPTERS, *ROTARY WING AIRCRAFT

ADVERSE CONDITIONS, AIR TRAFFIC CONTROL SYSTEMS, AIRCRAFT
INDUSTRY, AIR

SPACE, AVIATION SAFETY, DOCUMENTS, HELIPOINTS, INSTRUMENT FLIGHT,
PLANNING, REGULATIONS, REQUIREMENTS, VISUAL FLIGHT RULES

ID (25) Certification, NAS(National Airspace System)

AB (27) The Federal Aviation Administration developed the Rotorcraft Master

Plan to contribute to a climate in which industry can continue to
expand and realize the full potential of rotorcraft in meeting the
nation's transportation needs. This plan addresses all aspects of
rotorcraft requirements through the year 2000 in the areas of
certification, heliports, and the National Airspace System (NAS). It is
designed to interface with the NAS Plan and other planning documents
that will guide agency actions for the remainder of the 20th century.

Keywords: Aircraft industry; Rotary wing aircraft regulations; Visual
flight rules; Instrument flight; Aviation safety; Adverse conditions;
Helicopters. (edc)

AN (1) AD-A187 044/XAG

FG (2) 010200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Sudden In-Flight Incapacitation in General Aviation

DN (9) Final rept.

AU (10) Booze, Charles F., Jr

RD (11) Aug 1987

PG (12) 12 Pages

RS (14) DOT/FAA/AM-87/7

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *EMERGENCIES, *PILOTS, *AVIATION SAFETY, *CRASHES, *INCAPACITATION,
*AVIATION MEDICINE

RISK, SKILLS, VIGILANCE, PROBABILITY, STATISTICS, ESTIMATES, FLIGHT,

DOCUMENTS, INFLIGHT, STANDARDS, REDUNDANCY, CARDIAC ARREST

ID (25) *UNCONSCIOUSNESS, CONSCIOUSNESS

AB (27) Incapacitation in the general aviation flight environment is a matter

of utmost concern to the Federal Aviation Administration since the
likelihood of accident is greater due to lack of redundant pilot skills
in most instances. The purpose of this study was to appraise the
adequacy of medical standards in minimizing the risk of sudden
incapacitation. This study considers NTSB data and postcrash medical
data received by the Medical Statistical Section of the Civil
Aeromedical Institute (CAMI), Oklahoma City, Oklahoma, during the time
period from 1975 to the present and other related literature to
estimate the probability of incapacitation in general aviation. The
occurrence of incapacitation for obvious medical reasons is less than
would be expected based on general population morbidity/mortality data;
however, the need for continued vigilance in certification and
education regarding flying with known or suspected medical problems is
emphasized. Keywords: Cardiac arrest; Medical emergencies; Loss of
consciousness.

AN (1) AD-A189 546/XAG

FG (2) 120500

120600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) New York TRACON Demonstration of Program Recoding Software Translation
and Verification Methodology Document.

DN (9) Final rept.

RD (11) Aug 1987

PG (12) 127 Pages

RS (14) DOT/FAA/CT-87/33

CT (15) DTFA03-85-C-0058

RC (20) Unclassified report

NO (21) Prepared in cooperation with Data Transformation Corp. Silver Spring,
MD.

DE (23) *ALGORITHMS, *CODING, *COMPUTER PROGRAMS, *COMPUTERS
CONVERSION, DEMONSTRATIONS, DOCUMENTS, HIGH LEVEL LANGUAGES,
METHODOLOGY, NEW YORK, PROGRAMMING LANGUAGES, SHORT
RANGE(TIME),
SOURCES, TRACKING, TRANSLATIONS

AB (27) This document is the concluding report in a project whose objective was
to convert in a reasonably short period of time, machine dependent
software to a higher order language capable of running on any general
purpose computer. A subset of the New York (N.Y.) TRACON (version

A5.04) software was chosen for conversion, specifically, the tracking algorithms. The effort concluded with a demonstration of the converted software running on an IBM 3080 processor and was presented on a Sony display. The present UNIVAC ULTRA programs were converted to ADA/PDL and the system implemented in PASCAL. Over 53,000 lines of ULTRA source code were converted to 47,000 lines of ADA/PDL (including commentary) and then to 32,000 lines of PASCAL (without commentary).

AN (1) AD-A189 141/XAG

FG (2) 010500

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Heliport Parking, Taxiing, and Landing Area Criteria Test Plan.

DN (9) Technical note

AU (10) Weiss, Rosanne M.

RD (11) Jul 1987

PG (12) 19 Pages

RS (14) DOT/FAA/CT-TN87/10

RC (20) Unclassified report

DE (23) *HELIPORTS, *TAXIING, *LANDING FIELDS, *PARKING FACILITIES
BAROMETRIC PRESSURE, DATA ACQUISITION, DATA REDUCTION, FLIGHT,
FLIGHT

TESTING, HOVERING, ILLUMINATION, INDIANA, MANEUVERABILITY,
MANEUVERS,

NEW JERSEY, NEW YORK, PLANNING, SEPARATION, SURFACES, TAXIWAYS,
TEST

EQUIPMENT, VARIATIONS, VERTICAL ORIENTATION, WIND VELOCITY

AB (27) This flight test plan describes the methodology to examine and validate the current heliport surface separation and maneuvering criteria as defined in the Heliport Design Guide and determine if changes can be made to the current criteria. Operational measures will be collected at the Indianapolis Heliport, Indiana, and Wall Street Heliport, New York. Additional flight tests will be conducted at the Federal Aviation Administration (FAA) Technical Center, Atlantic City International Airport, New Jersey, using instrumented UH-1H and S-76 helicopters. Flight maneuvers at the Technical Center are to identify vertical variation from the recommended taxiing heights and lateral variation from a predetermined path, under various wind and lighting conditions. Wind velocity and barometric pressure data will be collected during hover operations to determine rotorwash effects at different locations around a helipad, taxiway, and parking areas. This data will be used to create a baseline to be used in characterizing heliport surface

maneuver areas. The test development, test equipment, data collection, and data reduction and analysis of the flight data are discussed. A schedule for the completion of the associated tasks is presented.

AN (1) AD-A189 424/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Microwave Landing System Area Navigation (MLS RNAV) Transformation Algorithms and Accuracy Testing

AU (10) Billman, Barry R.

Remer, James H

Chang, Min-Ju

RD (11) Jul 1987

PG (12) 150 Pages

RS (14) DOT/FAA/CT-TN87/19

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS

ACCURACY, ALGORITHMS, ANGLES, CONICAL BODIES, DATA TRANSMISSION
SYSTEMS, DISTANCE MEASURING EQUIPMENT, ELEVATION, ERRORS, FLIGHT
PATHS,

HELICOPTERS, NAVIGATION, PRECISION, RUNWAYS, SCENARIOS, SIGNALS,
SOURCES, TERMINAL FLIGHT FACILITIES, TEST AND EVALUATION,
TRANSFORMATIONS(MATHEMATICS), TRANSMITTERS, COMPUTER PROGRAMS,
FORTRAN

FORTRAN

ID (25) MLS RNAV(Microwave Landing System Area Navigation), Computer program listings

AB (27) Microwave Landing System Area Navigation (MLS RNAV) is a technique which affords the ability to perform precision navigation in the terminal area of a helicopter or airport. It utilizes the signal coverage provided by the MLS angle data transmitters and associated precision distance measuring equipment (DME/P). Navigation performed using an MLS RNAV system is not limited to approaches along a runway centerline or azimuth radial, but may assume any conceivable flightpath within MLS coverage. Examples of these types of approaches would include curves, segmented and oblique offset (parasite), as well as computed centerline (offset) approaches. The work presented herein treats MLS RNAV from a theoretical perspective. MLS RNAV transformation algorithms are developed and tested under real world and laboratory conditions. Anticipated system accuracy is computed under various anticipated operational scenarios. These scenarios include parasite and computed centerline approaches, including the effects of signal source error. The effects on total system accuracy of offsetting the conical

elevation transmitter from the runway centerline are presented. The errors associated with computed centerline approaches when the azimuth is offset from the runway centerline is presented.

AN (1) AD-A183 808/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT

SYSTEMS

TI (6) U. S. Civil Airmen Statistics 1985 and 1986

AU (10) Carter, Patricia W.

RD (11) 30 Jun 1987

PG (12) 54 Pages

RC (20) Unclassified report

DE (23) *AVIATION PERSONNEL, *CIVIL AVIATION, *STATISTICAL DATA AIR FORCE PERSONNEL, AIRCRAFT, PILOTS, GROUND LEVEL, INSTRUCTORS, MEDICAL EXAMINATION, OKLAHOMA, AERONAUTICS, STATISTICS, FLIGHT, NAVIGATORS, AIR TRAFFIC CONTROLLERS

AB (27) This publication is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active Airmen is one who hold both an airmen certificate a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots, control tower operators, flight navigators, and lighter-than-air pilots are not required to have a medical examination but the numbers represent only those who had a valid medical certificate. Mechanics, parachute riggers, ground instructors, and dispatchers certificates represent all certificates on record at the Aeronautical Center.

AN (1) AD-A184 499/XAG

FG (2) 230500

010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Summary Report of the History and Events Pertinent to the Civil Aeromedical Institute's Evaluation of Providing Smoke/Fume Protective Breathing Equipment for Airline Passenger Use.

DN (9) Final rept.

AU (10) Higgins, E. A.

RD (11) Jun 1987

PG (12) 16 Pages

RS (14) DOT/FAA/AM-87/5

RC (20) Unclassified report

DE (23) *AIR BREATHING, *PROTECTIVE EQUIPMENT

PASSENGERS, PASSENGER AIRCRAFT, HOODS, FUMES, SMOKE, AVIATION ACCIDENTS

AB (27) This report presents a summary of the history and events pertinent to the Civil Aeromedical Institute's evaluation of the feasibility of providing smoke/fume protective breathing equipment for passenger use, including research undertaken, reports produced, and responses to requests for information.

AN (1) AD-A181 331/XAG

FG (2) 010200

010600

150300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 25, 1 Jul-31 Dec 86.

RD (11) May 1987

PG (12) 27 Pages

RS (14) DOT/FAA/ACS-87-1(25)

RC (20) Unclassified report

NO (21) Report of the Administrator of the Federal Aviation Administration to Congress.

DE (23) *CIVIL AVIATION, *SECURITY, *COMMERCIAL AVIATION

AIR TRANSPORTATION, PASSENGERS, AIRPORTS, FOREIGN, AIR, INTERNATIONAL,

TRAVEL, UNITED STATES, HIGH RATE, RISK, INTERNATIONAL RELATIONS, STERILIZATION, TERMINAL FLIGHT FACILITIES, AVIATION SAFETY, SECURITY PERSONNEL, TERRORISM, BOMBS, AIRCRAFT HIJACKING, PASSENGER

AIRCRAFT,

SABOTAGE

AB (27) This 25th Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program is submitted in accordance with section 315(a) of the Federal Aviation Act of 1958. This section requires that a semiannual report be submitted concerning the effectiveness of air carrier passenger screening procedures. It presents a concise picture

of the nationwide effectiveness of the procedures used to screen passengers and their carry-on items prior to boarding scheduled and public charter flights, as well as visitors desiring access to sterile air terminal passenger boarding areas. This report also presents a summary of the assessments conducted to determine the effectiveness of the security measures at foreign airports served by U.S. air carriers, foreign airports from which foreign air carriers serve the United States, foreign airports which pose a high risk of introducing danger to international air travel, and such other foreign airports as the Secretary of Transportation may deem appropriate. These assessments were conducted pursuant to the International Security and Development Cooperation Act of 1985 (Public Law 99-83) which amended section 1115 of the Federal Aviation Act of 1958. In addition, this report includes a summary of the activities of the Federal Air Marshals and the changes in security measures which were instituted during 1986 to prevent or deter terrorist and other criminal acts against civil aviation.

SE (34) 25

AN (1) AD-A183 299/XAG

FG (2) 170703

220200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test Plan for Helicopter GPS (Global Positioning System) Applications

DN (9) Technical note

AU (10) Magrogan, Michael

RD (11) May 1987

PG (12) 18 Pages

RS (14) DOT/FAA/CT-TN87/16

CT (15) T0701N

RN (18) XH-FAA

RC (20) Unclassified report

AL (22) Approved for public release; distribution unlimited.

DE (23) *HELICOPTERS, *NAVIGATION, *GLOBAL POSITIONING SYSTEM, *NAVIGATION

SATELLITES, *MICROWAVE LANDING SYSTEMS

TEST AND EVALUATION, ANGLES, FLIGHT TESTING, POSITION(LOCATION), ACQUISITION, MOBILIZATION, COMPOSITE STRUCTURES, CODING, FLIGHT, PLANNING, RECEIVERS, ANTENNAS, ARTIFICIAL SATELLITES, INSPECTION, GUIDANCE, SURVEILLANCE, AUTOMATIC, MASKING, ROTARY WING AIRCRAFT, LORAN, COMPOSITE AIRCRAFT

AB (27) This test plan describes a project designed to collect data via flight testing from the Global Positioning System (GPS) when receivers are

mounted on helicopters. GPS issues to be investigated include antenna location, satellite shielding, and multipath influences which might occur with rotorcraft applications in urban downtown areas. Minimum masking angle issues will also be addressed. GPS integrated with other navigation and guidance systems such as microwave landing system (MLS) and Loran C will also be investigated. Both precision (P) and coarse/acquisition (C/A) code receivers will be evaluated. In addition, studies will be carried out to determine how to install a GPS antenna on composite body aircraft. Further studies may be related to automatic dependent surveillance functions. Future work will include evaluation of a GPS P code receiver as a reference for flight inspection.

Keywords: Satellite Navigation.

AN (1) AD-A183 845/XAG

FG (2) 170703

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Results of Loran C Nonprecision Approach Flight Checks for the Limited Implementation Program.

DN (9) Technical note

AU (10) Erikson, Robert H.

RD (11) May 1987

PG (12) 67 Pages

RS (14) DOT/FAA/CT-TN86/62

RC (20) Unclassified report

DE (23) *FLIGHT TESTING, *LORAN

AERONAUTICS, AIRPORTS, FLIGHT, INSPECTION, UNITED STATES, UNITED STATES

GOVERNMENT

AB (27) This report describes flight tests conducted by the Federal Aviation Administration (FAA) Technical Center at nine airports across the continental United States. The airports were selected for the joint FAA/national Association of State Aviation Officials (NASAO) limited Loran C implementation program for instrument flight rules nonprecision approaches. Flight inspection procedures, equipment, and criteria are discussed.

AN (1) AD-A185 523/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Boeing 727 MLS (Microwave Landing System) Terminal Instrument Procedures (TERPS) Approach Data Collection and Processing. Data Report.

DN (9) Technical note Feb 86-Jan 87

AU (10) Pugacz, Edward J.

RD (11) May 1987

PG (12) 14 Pages

RS (14) DOT/FAA/CT-TN87/9

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS

AIRBORNE, AIRCRAFT, DATA ACQUISITION, DATA BASES, EXPERIMENTAL DATA,

FIXED WING AIRCRAFT, FLIGHT TESTING, GRAPHICS, GROUND LEVEL, INSTRUMENTATION, PLOTTING, PROCESSING, STATISTICAL PROCESSES, TRACKING,

JET TRANSPORT AIRCRAFT

ID (25) TERPS(Terminal Instrument Procedures), Boeing 727 aircraft

AB (27) This is one part of the Fixed Wing MLS TERPS data collection and processing program being performed at the Federal Aviation Administration (FAA) technical Center. The program was undertaken to collect flight test data in various aircraft to establish a data base for development of MLS TERPS criteria. Data were collected during both missed approaches and landings using glides lopes of 3deg, 3 deg, CAT II, 3.5 deg, and 4 deg with all flights being tracked by ground based tracking systems. Statistical processing was performed on both the airborne and tracker data, and various graphical plots were produced. The processed data were delivered to AVN-210 for inclusion in the MLS TERPS criteria development data base.

AN (1) AD-A188 408/XAG

FG (2) 050900

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Private Pilot Judgement Training in Flight School Settings

AU (10) Diehl, Alan E.

Lester, Lewis F.

RD (11) May 1987

PG (12) 39 Pages

RS (14) DOT/FAA/AM-87/6

RC (20) Unclassified report

DE (23) *FLIGHT TRAINING, *JUDGEMENT(PSYCHOLOGY)

AVIATION ACCIDENTS, CLIMATE, CONTROL, ERRORS, EXPERIMENTAL DESIGN, FLIGHT TESTING, INSTRUCTIONAL MATERIALS, INSTRUCTIONS, INSTRUCTORS, MATERIALS, OBSERVATION, PILOTS, SCHOOLS, STUDENTS, TRAINING,

DECISION

MAKING, SKILLS

AB (27) Pilot judgment errors have long been recognized as an important factor in aviation accidents. Previous studies have demonstrated that specialized training procedures can significantly reduce the number of decisional errors made by newly certified private pilots during in-flight tests. However, the subjects in these studies were all college-age students enrolled in full time aviation training programs which were taught by highly motivated instructors. The present study examined the utility of revised judgement training was compared with that of a control group drawn from these same FBOs. The behavioral test of judgement was in the form of an observation flight administered by observers who were uninformed of the details of the experimental design. Students and instructors also completed a critique of the program materials. The results of the study suggest that improvements in pilot decisionmaking skills can be achieved in the less formal instructional climate which characterizes many conventional flight school programs. The revised judgement training program and instructional materials are acceptable to the user community, and most participants found them to be very useful.

AN (1) AD-A180 283/XAG

FG (2) 010200

010600

040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMR FOR

DEVELOPMENT AND LOGISTICS

TI (6) Integrated FAA Wind Shear Program Plan.

RD (11) Apr 1987

PG (12) 93 Pages

RS (14) DOT/FAA/DL-87/1

RN (18) DOT/FAA/VS-87/1

DOT/FAA/AT-87/1

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *WIND SHEAR

SCHOOLS, AIRBORNE, DETECTORS, AVIATION ACCIDENTS, AERONAUTICS, COMMUNITIES, FLIGHT, GUIDANCE, DETECTORS, GROUND LEVEL, AIRCRAFT, AIRPORTS, FLIGHT PATHS, INDUSTRIES, TRAINING, DETECTION, AVOIDANCE,

INFORMATION SYSTEMS, MANAGEMENT, OPTICAL RADAR, SYSTEM SAFETY,
RADAR,
THUNDERSTORMS, WEATHER, PLANNING, LOW LEVEL, METEOROLOGY,
SAFETY,

TRANSPORTATION, TECHNOLOGY TRANSFER, HAZARDS
AB (27) Wind shear can have serious and sometimes disastrous effects on the flight path of an aircraft, especially when encountered below 1.000 feet AGL. In the last 10 years, wind shear was a contributing factor in 14 major aircraft accidents, 4 of which resulted in a total of 401 casualties. Following these accidents, the National Transportation Safety Board (NTSB) issued a number of recommendations urging the FAA to address the wind shear problem. Recommendations pertaining to wind shear were also issued by the National Research Council (NRC) in an in-depth study on wind shear published in 1983. The NTSB and NRC recommendations serve as a backdrop to the development of the Integrated FAA Wind Shear Program Plan. Program elements include education and training, ground sensors, airborne sensors, and flight guidance systems, terminal information systems, and low-level meteorological hazard characterization. The plan emphasized how each program element operationally relates to the others and incrementally adds to the overall National Airspace System safety. Other branches of the government, the industry, aviation community and the academic sector are also involved in developing this program. This report outlines FAA's efforts to address the wind shear hazard, and to facilitate the transfer of technology to the operational arena.
Keywords: Aviation safety; Lidar; Airport terminal areas; Weather; Thunderstorms; Radar.

AN (1) AD-A181 503/XAG

**FG (2) 010500
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS**

TI (6) Terminal Area Forecasts, Fiscal Years 1987-2000.

RD (11) Apr 1987

PG (12) 524 Pages

RS (14) FAA-APO-87-8

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *FORECASTING, *AIR TRAFFIC, *CIVIL AVIATION
AERONAUTICS, AIRCRAFT INDUSTRY, APPROACH, CONTRACTS,
FORECASTING,

PLANNING, RADAR, TERMINAL FLIGHT FACILITIES, TOWERS, UNITED STATES,
AIR

TRAFFIC CONTROL TERMINAL AREAS, COMPUTER PROGRAMS

AB (27) This report contains forecasts of aviation activity for 840 airports in the United States for fiscal years 1987-2000. These include 398 airports with FAA air traffic control towers and radar approach control service and 15 FAA contract towers. For each airport, detailed forecasts are made for the four major users of the air traffic system: air carriers, air taxi/commuters, general aviation, and military.

Summary tables contain national, FAA regional, and state aviation data and other airport specific highlights. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA headquarters and regional offices and to provide airport-specific information that can be used by state and local aviation authorities, the aviation industry, as a whole, and the general public. Keywords: Terminal area forecasts, Enplanements, Aircraft operations, Air carrier, Commuter, Air taxi, Military aviation.

AN (1) AD-A182 514/XAG

**FG (2) 140200
210400
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Autogas in General Aviation Aircraft.

DN (9) Final rept.

AU (10) Byrnes, H. S.

Cavage, William C.

Ferrara, Augusto M.

RD (11) Apr 1987

PG (12) 71 Pages

RS (14) DOT/FAA/CT-87/05

RC (20) Unclassified report

DE (23) *AVIATION GASOLINE, *DYNAMOMETERS

AIRCRAFT, AIRCRAFT ENGINES, TEST AND EVALUATION, PASSENGER
VEHICLES,

FUELS, TEMPERATURE, FLIGHT, TEST METHODS, ATMOSPHERIC
TEMPERATURE,

COOLING, ENGINES, AGING(MATERIALS), FUEL SYSTEMS, LONG RANGE(TIME),
STORAGE, VAPOR LOCK, WINGS, CIVIL AVIATION, VAPOR PRESSURE

AB (27) A series of aircraft engine tests were conducted on a dynamometer which compared the vapor lock tendency of selected automobile gasolines against aviation gasoline. The effects of fuel temperature, the

technique for heating the fuel used in vapor lock studies, the engine cooling air temperature, the fill level in the tanks, and fuel system configuration were investigated. The tendency for automobile gasoline to detonate in an aircraft engine was investigated, and the results show a strong correlation with the Motor Octane Number. Flight data is presented which shows the effect of the mode of operation on fuel system temperatures in two typical general aviation aircraft. Select results from a fuel aging study demonstrate the effects of long-term storage of automobile gasoline in typical general aviation aircraft wing tanks. Based on these results, a number of considerations pertaining to certification of general aviation aircraft fuel systems with automobile gasoline are identified. Keywords: Aviation gasoline, Vapor lock, Automobile gasoline, Dynamometer tests, Reid vapor pressure, Aircraft certification test, Detonation, Octane number.

AN (1) AD-A181 089/XAG
FG (2) 010600
230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Study of Passenger Workload as Related to Protective Breathing Requirements.

DN (9) Final rept.

AU (10) Higgins, E. A.

Saldivar, J. T.

Lyne, P. J.

Funkhouser, G. E.

RD (11) Mar 1987

PG (12) 75 Pages

RS (14) DOT/FAA/AM-87/2

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *EMERGENCIES, *BREATHING APPARATUS, *PASSENGERS

AIRCRAFT, CARBON DIOXIDE, EVACUATION, GAS EXCHANGE(BIOLOGY), OXYGEN

CONSUMPTION, PRODUCTION, PROTECTION, QUALIFICATIONS, RATES, REQUIREMENTS, RESPIRATION, STANDARDS, WORKLOAD, BREATHING MASKS

ID (25) LPN-FAA-AM-B-87-PRS-81, LPN-FAA-AN1-B-86-PRS-71

AB (27) This study was undertaken to evaluate workloads, oxygen consumption, carbon dioxide production and respiratory exchange rates for passengers during an emergency aircraft evacuation. This was accomplished in an effort to formulate possible qualification standards for a passenger

protective breathing device intended to protect from smoke and fumes.

Keywords: Aircraft safety.

AN (1) AD-A181 304/XAG

FG (2) 060500

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Tolerance by Unacclimated Beagle Dogs to Freezing and Subfreezing Temperatures.

DN (9) Final rept.

AU (10) Hanneman, Gerald D.

Sershon, James L.

RD (11) Mar 1987

PG (12) 14 Pages

RS (14) DOT/FAA/AM-87/3

RC (20) Unclassified report

DE (23) *DOGS, *EXPOSURE(PHYSIOLOGY), *TOLERANCES(PHYSIOLOGY), *TOLERANCES(PHYSIOLOGY), *CRYOBIOLOGY

AIR, LOW TEMPERATURE, EXPOSURE(GENERAL), FREEZING, MAINTENANCE, RECTUM,

TEMPERATURE, ATMOSPHERIC TEMPERATURE, FEMALES, HEART RATE, MALES, BODY

TEMPERATURE, RATES, RESPIRATION

ID (25) *Cold stress(Physiology), LPN-FAA-AM-E-83-VM-1

AB (27) Beagle dogs (3 and 6 months of age) unacclimated to cold air temperatures were exposed to temperatures near freezing (32 F) or subfreezing (near 20 F), while housed in simulated transport crates. All exposed dogs safely tolerated 4 hours of continuous cold exposure as evidenced by maintenance of rectal temperatures within an acceptable normal range. Heart rate, respiration rate, and behavior (barking and excessive movement) showed no deleterious change during exposure. No significant differences between males and females were found for rectal temperature, heart rate, and respiration rates. However, the males displayed more barking and excessive movement than females of the same age. The micro environment air temperature in the simulated transport crate was increased significantly (P. 0.001) by the presence of a dog during exposure to freezing temperatures. Results indicate that no harmful stress was encountered by the dogs exposed to 32 F and 20 F for 4 hours.

AN (1) AD-A181 369/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) 1986 Survey of Aviation Business Operators: Their Views of FAA (Federal Aviation Administration) Airworthiness Inspectors.
DN (9) Final rept.
AU (10) Schroeder, David J.
Collins, William E.
Dollar, Carolyn S.
Schaffer, Charles W., Jr
RD (11) Mar 1987
PG (12) 33 Pages
RS (14) DOT/FAA/AM-87/4
RC (20) Unclassified report
DE (23) *AIRWORTHINESS, *INSPECTION
RANKING, RATINGS, USER NEEDS, AERONAUTICS, COMMERCE, POLICIES, TABLES(DATA), SURVEYS, AIRCRAFT INDUSTRY
ID (25) AWI(Airworthiness Inspections), LPN-FAA-AM-C-86/87-PSY-102
AB (27) A nationwide survey of 8,854 aviation business operators (users) was conducted to assess their perceptions of, and satisfaction with, the performance of the agency's avionic and maintenance airworthiness inspection (AWIs). Results are based on returns received from 45% of the overall sample. User ratings on 21 items were analyzed and comparisons were made for each FAA region, type of aviation business activity, and FAA district office within each region. A criterion based on other research concerning consumer satisfaction with services was used to identify positive aspects of AWI performance and areas of performance in need of improvement. Overall satisfaction with AWI performance was fully acceptable and within the range of levels reported in the literature for higher ranking professional/technical services. Users felt very positively about AWI knowledge of FAA regulations and policies, AWI courtesy, and their thoroughness. Areas that could be targeted for improvement included: the consistency and clarity of the technical interpretations, the frequency of visits, and reliance on AWIs for counseling in either regulatory or technical areas.

AN (1) AD-A182 152/XAG
FG (2) 170703
010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Loran C VNAV (Vertical Navigation) Approaches to the Technical Center Heliport.
DN (9) Technical note
AU (10) Magrogan, Michael
RD (11) Mar 1987
PG (12) 150 Pages
RS (14) DOT/FAA/CT-TN86/56
RC (20) Unclassified report
AL (22) Availability: Document partially illegible.
DE (23) *LORAN, *NAVIGATION, *HELIPORTS
ERRORS, VERTICAL ORIENTATION, FLIGHT, NAVIGATORS, TRACKING
AB (27) This report documents the results of Loran C vertical navigation (VNAV) approaches to the Federal Aviation Administration (FAA) Technical Center Heliport. Results of this study show that the three dimensional (3D) Loran C Navigator met the requirements of Advisory Circular (AC) 90-45A for two dimensional (2D) error components of total system crosstrack (TSCT) and flight technical error (FTE). In addition, the 3D error component of vertical flight technical error (VFTE) met the requirements of AC 90-45A.
23

AN (1) AD-A182 196/XAG
FG (2) 210400
131200
010200
010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Laboratory Characterization Tests for Antimisting Fuel.
DN (9) Final rept.
AU (10) Wilson, Joseph J.
RD (11) Mar 1987
PG (12) 127 Pages
RS (14) DOT/FAA/CT-86/23
RC (20) Unclassified report
DE (23) *AVIATION FUELS, *FUEL ADDITIVES, *KEROSENE, *FIRE SAFETY, *AIRCRAFT
CRASHES, FUELS, PHYSICAL PROPERTIES, RHEOLOGY, RATES, OPERATION, ANTIFOGGING AGENTS, LABORATORY TESTS, QUALITY CONTROL, STANDARDIZATION,
AVIATION ACCIDENTS, AVIATION SAFETY, FIRE HAZARDS, REDUCTION
ID (25) *Antimisting fuels

AB (27) Experiments have shown that FM-9 antimisting fuel had the potential for precluding the fine mist and associated fireball generation in aircraft post-crash situations while allowing for the restoration of the filtration and atomizing characteristics required for aircraft operation. The Federal Aviation Administration, the Aircraft Establishment, the National Aeronautics and Space Administration, the Jet Propulsion Laboratory, Southwest Research Institute, and Pratt and Whitney Aircraft developed many specialized laboratory characterization tests throughout the antimisting fuel program to evaluate the antimisting properties, the degradability, the composition, and rheological properties of FM-9 antimisting fuel and the physical properties of FM-9 slurry used in the inline blending process for antimisting fuel. This report documents all the laboratory characterization tests that were successfully developed and used as a standardized test method during the program. Keywords; Antimisting, Fuel, Rheology, Quality Control, Laboratory Tests, Safety, Fuel, Ploymer, Characterization, Shear Rate, Non Newtonian, Inline, Blending.

AN (1) AD-B225 671/XAG

FG (2) 010500
130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Simulation Tests of Proposed Instrument Approach Lighting Systems for Heliport Operations.

DN (9) Technical note

AU (10) Jones, Paul H.

RD (11) Mar 1987

PG (12) 18 Pages

RS (14) DOT/FAA/CT-TN87/4

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *APPROACH LIGHTS, *HELIPORTS

SIMULATION, CONFIGURATIONS, VISIBILITY, LIGHTING EQUIPMENT, VISUAL PERCEPTION, VISUAL AIDS, INSTRUMENT LANDINGS

DL (33) 12

AN (1) AD-A178 205/XAG

FG (2) 010500
050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) FAA Aviation Forecasts - Fiscal Years 1987-1998.

RD (11) Feb 1987

PG (12) 184 Pages

RS (14) FAA-APO-87-1

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *FORECASTING, *CIVIL AVIATION, *AIR TRAFFIC CONTROL SYSTEMS

AERONAUTICS, AIRCRAFT INDUSTRY, AIRPORTS, COSTS, DOMESTIC, ECONOMICS,

FLIGHT, FUELS, GROWTH(GENERAL), REVENUE SHARING, STATIONS, ROUTING,

AIRPORT CONTROL TOWERS, MILITARY AIRCRAFT, PLANNING PROGRAMMING BUDGETING

AB (27) This report contains the FAA's Fy 1987-98 forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts were prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public. The overall outlook for the forecast period is for strong economic growth, rising real fuel prices, and moderate inflation. Based upon these assumptions, aviation activity is forecast to increase by 1998 by 34 percent at towered airports (commuters, 58%; air carriers, 33%; general aviation, 33%; military, 0%); 34% at air route traffic control centers (commuters, 82%; air carriers, 31%; general aviation, 31%; military, 0%); and 22 percent in flight services performed. Hours flown by general aviation is forecast to increase 9% and helicopter hours flown, 50%. Scheduled domestic revenue passenger miles (RPMs) are forecast to increase 77%, with scheduled international RPM's forecast to increase by 80%. Regionals/commuters RPM's forecast to increase by 165%.

AN (1) AD-A179 296/XAG

FG (2) 010500
040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Operational Suitability of the Automated Weather Observing System

(AWOS) at Heliports.

DN (9) Final rept.
AU (10) Matos,Rene A.
Weiss,Rosanne M.
RD (11) Feb 1987
PG (12) 29 Pages
RS (14) DOT/FAA/CT-87-3
RN (18) DOT/FAA/PM-86/52
RC (20) Unclassified report
DE (23) *WEATHER STATIONS, *HELIPORTS
AUTOMATION, BARRIERS, DECISION MAKING, FLIGHT TESTING, HEIGHT,
HELICOPTERS, INSTALLATION, LANDING, LANDING PADS, QUESTIONNAIRES,
SITES, STANDARDS, SURFACES, AUTOMATIC, WEATHER, WIND
ID (25) *AWOS(Automated Weather Observing System)
AB (27) During 1985, a series of flight tests were made at the Federal Aviation
Administration (FAA) Technical Center to develop siting standards for
the installation of Automated Weather Observing Systems (AWOS) at
helicopters. The results of this evaluation were documented in the
report 'The Siting, Installation, and Operational Suitability of the
Automated Weather Observing System (AWOS) at Helicopters'. A
questionnaire (OME approved) was distributed through the helicopter
operators/managers to the users of the New Orleans Downtown Heliport,
Indianapolis Downtown Heliport, and Technical Center Heliport. This
report presents the analysis of the questionnaires used to determine
the operational suitability of AWOS at helicopters. The results of the
analysis of the questionnaires indicate that the AWOS equipment is
suited for heliport use. A distinction should be made between the
prevailing winds at the landing area and winds in the heliport
vicinity. This situation can be resolved with the use of a wind sock in
conjunction with the anemometer. The wind sock should be placed near
the landing pad to provide surface wind information and the anemometer
should be placed as close to the nominal landing decision point height
as possible in order to provide prevailing wind information above the
height of obstacles surrounding the heliport. (Author)

AN (1) AD-A179 897/XAG

**FG (2) 010400
010200**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Heliport Visual Approach Surface Testing Test Plan.

DN (9) Technical note
AU (10) Weiss,Rosanne M.

Sackett,John R.

RD (11) Feb 1987
PG (12) 31 Pages
RS (14) DOT/FAA/CT-TN86/61
RC (20) Unclassified report
DE (23) *HELICOPTERS, *APPROACH
AIRCRAFT, HELIPORTS, SURFACES, AERONAUTICS, UNITED STATES
GOVERNMENT,
HELIPADS, FLIGHT TESTING, VISION, METEOROLOGY
ID (25) VMC(Visual Meteorological Conditions)
AB (27) This Technical Note identifies procedures to be used during tests to be
conducted at the Federal Aviation Administration Technical Center.
These tests are designed to test the applicability of existing heliport
approach and departure surface criteria. Three different types of
aircraft will be used. Keywords: Helicopters; Heliports; Helipads;
VMC(Visual Meteorological Conditions).

AN (1) AD-A181 628/XAG

**FG (2) 050300
010500**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS**

TI (6) Airport and Airway Costs: Allocation and Recovery in the 1980's.

DN (9) Final rept.
AU (10) Taylor,Daniel E.
RD (11) Feb 1987
PG (12) 66 Pages
RS (14) FAA-APO-87-7
RC (20) Unclassified report
DE (23) *ALLOCATIONS, *COSTS, *AIRPORTS, *FINANCIAL MANAGEMENT
RECOVERY, FINANCE, PUBLIC ADMINISTRATION, AERONAUTICS, TAXES, USER
NEEDS, COST ESTIMATES
AB (27) This report examines the financing of the National Airport and Airway
System through an allocation of system costs and an analysis of user
taxes and existing cost recovery. FAA costs for fiscal year 1985 are
allocated to 10 primary user groups and to the public interest. Cost
shares are projected to 1997 with full account given to changes in
aviation activity and the effects of FAA modernization efforts.
Aviation user taxes are projected for 1988 and 1989 and compared with
allocated costs. Keywords: Public finance, Aviation User Taxes.

AN (1) AD-A183 153/XAG

**FG (2) 170703
010500**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Heliport Critical Area Flight Test Results.

DN (9) Technical note

AU (10) Billmann, Barry R.

Webb, Michael M.

Morrow, John G.

Gallagher, Donald W.

Wolf, Christopher J.

RD (11) Feb 1987

PG (12) 145 Pages

RS (14) DOT/FAA/CT-TN86/64

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS, *HELIPORTS

AIR SPACE, ANTENNAS, HELICOPTERS, APPROACH, INSTRUMENT LANDINGS,
MONITORING, POLES(SUPPORTS), SIGNALS, ANTENNAS, FLIGHT TESTING,
MANEUVERS, TEST AND EVALUATION, MICROWAVE EQUIPMENT

AB (27) The development of the microwave landing system (MLS) has resulted in the need for several different flight tests to optimize the utility of MLS. One such series of tests were designed to define criteria for siting MLS antennas at heliports. Due to the unique maneuver capabilities and the limited real estate available at heliports, flight tests were also conducted to determine the airspace and real estate surrounding the MLS antennas which must be protected when the MLS is sited at heliports. The need for this protected region is to guarantee signal coverage and quality. Based on the test flight results conducted at the Federal Aviation Administration (FAA) Technical Center, a minimum region (surrounding the MLS antennas and signal monitor poles) which must be protected is identified. Keywords: Helicopter, Instrument Approaches.

AN (1) AD-A180 281/XAG

**FG (2) 050200
060500**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 through 1986

AU (10) Dills, J. R.

Grimm, Marcia H.

RD (11) Jan 1987

PG (12) 89 Pages

RS (14) DOT/FAA/AM-87/1

RC (20) Unclassified report

DE (23) *AVIATION MEDICINE, *INDEXES
MEDICAL RESEARCH

ID (25) FAA(Federal Aviation Administration)

AB (27) An index to Office of Aviation Medicine Reports (1964-1986) and Civil Aeromedical Research Institute Reports (1961-1963) is presented as a reference for those engaged in aviation medicine and related activities. It lists all FAA aviation medicine reports published from 1961 through 1986: chronologically alphabetically by author, and alphabetically by subject. National Technical Information Service order numbers are shown in the chronological listing after the report titles.

AN (1) AD-A207 328/XAG

**FG (2) 010500
170703
010600
050300**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY**

AND PLANS

**TI (6) Establishment and Discontinuance Criteria for Runway Visual Range (RVR)
at Category I Precision Landing System Runway**

AU (10) Keech, Ward L.

RD (11) Jan 1987

PG (12) 104 Pages

RS (14) FAA-APO-87-9

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL TERMINAL AREAS, *RUNWAYS

AIR TRAFFIC CONTROL SYSTEMS, AIRBORNE, AIRPORTS, BENEFITS, COST
ANALYSIS, COSTS, DECISION MAKING, INSTRUMENT LANDINGS,
INSTRUMENTATION,

INVESTMENTS, LANDING AIDS, MICROWAVE LANDING SYSTEMS, NAVIGATION,
POSITION(LOCATION), PRECISION, RANGE(DISTANCE), VISUAL PERCEPTION

ID (25) RVR(Runway Visual Range), Touchdown runway visual range systems

AB (27) This report presents a benefit/cost analysis of and develops establishment and discontinuance criteria for the Touchdown Runway Visual Range (RVR) system at the first two Category I precision instrumented runways at an airport. These criteria will be affected through a change to FAA Order 7031.2C, Airway Planning Standard Number One (APS-1). APS-1 contains the policy and summarizes the criteria used

in determining eligibility of terminal locations for establishment, discontinuance and improvements of air navigation facilities and air traffic control services. Applying the RVR benefit/cost criteria to 470 Category I runways at 359 airport traffic control tower locations identifies 103 airports satisfying the criteria for an initial Category I Touchdown RVR and 107 airports satisfying the criteria for both a first and second Category I Touchdown RVR, for a total of 317 qualifying runways. However, since benefit/cost criteria are but one of several inputs to the FAA decision-making process relative to investment in airport facilities and equipment, the ultimate site-specific investment action must be based on all pertinent factors and considerations. Sensitivity of the criteria results to several key assumptions is also examined. Keywords: Instrument landing system; Microwave landing system; Investment criteria; Capital budgeting. (EDC)

AN (1) AD-A195 912/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR
FOR AIRPORTS
TI (6) Accomplishments Under the Airport Improvement Program. Fiscal year 1987.
DN (9) Annual rept. no. 6 for period ending 30 Sep 87
AU (10) Hetsko, Jean
RD (11) 1987
PG (12) 33 Pages
RS (14) FAA-ARP-88-6
RC (20) Unclassified report
DE (23) DISTRIBUTION, MONEY
AB (27) This report contains information regarding the distribution of funds for various airport improvement projects.

AN (1) AD-A200 917/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS
TI (6) FAA Statistical Handbook of Aviation: Calendar Year 1987.
RD (11) 1987
PG (12) 211 Pages
RC (20) Unclassified report
DE (23) *CIVIL AVIATION, *STATISTICAL DATA

AERONAUTICS, AIR FORCE PERSONNEL, AIR TRANSPORTATION, AIRCRAFT, AIRPORTS, AVIATION ACCIDENTS, DICTIONARIES, EXPORTS, HANDBOOKS, IMPORTS, PRODUCTION

AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production and Imports/Exports, and a Glossary of the terms used in this publication. (KR)

AN (1) AD-A201 432/XAG
FG (2) 050500
010309
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION SECURITY

TI (6) Criminal Acts against Civil Aviation, 1987.
RD (11) 1987
PG (12) 30 Pages
RC (20) Unclassified report
DE (23) *AIRCRAFT HIJACKING, *LAW, *CRIMES
AIR, AIRCRAFT, AIRPORTS, CIVIL AVIATION, COMMERCE, CONTROL, EXERCISE(PHYSIOLOGY), EXPLOSIONS, RECORDS, SECURITY, THREATS
AB (27) The Federal Aviation Administration's Office of Civil Aviation Security maintains records of aircraft hijackings and other significant criminal acts against civil aviation worldwide. These records include actual and attempted hijackings, explosions aboard aircraft, at airports, and at airline offices, and other selected criminal acts against civil aviation. These offenses represent the most serious threats to the safety of civil aviation and carry with them the greatest potential danger to the commercial air traveler. Hijacking incidents are viewed within the context of the Federal criminal statute (49 USC 1472(b)) which defines air piracy as any seizure or exercise of control, by force or violence or threat of force or violence, or by any form of intimidation, and with wrongful intent, of any aircraft. There is no attempt made in this report to differentiate between an act of air piracy and an attempted act of air piracy. (JES)

AN (1) AD-A175 718/XAG
FG (2) 200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND

ENERGY

TI (6) Acoustic Flight Test of the Piper Lance

DN (9) Final rept. 1984-1986

AU (10) Jones, K. E.

RD (11) Dec 1986

PG (12) 109 Pages

RS (14) DOT/FAA/EE-86/9

RC (20) Unclassified report

DE (23) *PROPELLER NOISE, *AIRCRAFT NOISE

ACOUSTICS, FLIGHT TESTING, AIRSPEED, OVERFLIGHT, LEVEL(QUANTITY), AIRCRAFT, PROPELLERS, NOISE, TAKEOFF, OVERFLIGHT, PROPAGATION, TEST VEHICLES, REGULATIONS, ACOUSTIC MEASUREMENT, CLIMBING, PROPELLER BLADES, MACH NUMBER

ID (25) Small Aircraft, Aircraft propellers

AB (27) Research is being conducted to refine current noise regulation of propeller-driven small airplanes. Studies are examining the prospect of a substituting a takeoff procedure of equal stringency for the level flyover certification test certification test presently required. It was initially assumed that equivalency could be established between the takeoff and level flyover procedures via adjustment equations involving propeller helical-tip Mach number and noise propagation distance to account for differences in airspeed and altitude respectively. However, it was found that the propeller helical-tip March number adjustment equations did not adequately account for the measured noise level differences between the takeoff and level flyover procedures. After applying the adjustment equations, the takeoff noise levels were c 3 to 4 dB higher than the level flyover noise levels. This effect is believed to result from unsteady propeller blade loading when the aircraft is in a pitch-up position during a takeoff/climbout as opposed to level flight. The test aircraft was a Piper Cherokee Lance equipped with a two-blade constant speed propeller.

AN (1) AD-A179 401/XAG

FG (2) 131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Halon Extinguishment of Small Aircraft Instrument Panel Fires.

DN (9) Final rept.

AU (10) Slusher, G. R.

Wright, J. A.

Speitel, L. C.

RD (11) Dec 1986

PG (12) 33 Pages

RS (14) DOT/FAA/CT-86/26

RC (20) Unclassified report

DE (23) *FIRE EXTINGUISHERS, *FIRE EXTINGUISHING AGENTS

AIRCRAFT FIRES, DECOMPOSITION, POLYMERS, HANDS, INSTRUMENT PANELS,

AIRCRAFT, INSULATION, WIRE, FUSELAGES, EXTINGUISHING, HYDRAULIC FLUIDS,

FIRES, AVIATION SAFETY, PILOTS, CONCENTRATION(COMPOSITION),

POISONOUS

GASES, TOXIC HAZARDS

ID (25) Halon-1301 fire extinguishing agent, Halon-1211 fire extinguishing agent

AB (27) Hand-held Halon 1211 and Halon 1301 fire extinguishers of 2.5-pound 3-pound capacity, respectively, were discharged to determine their effectiveness on instrument panel fires in a small aircraft. The fires consisted of aircraft wire insulation and hydraulic fluid located below and behind the instrument panel in a Piper Model PA-30 Twin Comanche fuselage. The extinguishers were discharged using two methods: (1) by directing agent upward under the instrument panel, and (2) by directing agent behind the instrument panel by discharging through Fireports mounted on the instrument panel. Except for one test, the fires were extinguished rapidly upon discharge of the Halon extinguishers. The two methods of discharge were equally effective in extinguishing the fires. Extinguishers charged with Halon 1211 and Halon 1301 were both effective for fire extinguishment. In the test where the fire was not extinguished, the fire was located under the panel on the copilot's side on the extinguisher was discharged through a Fireport located on the extreme opposite side (pilot's side). In this test, the fire was knocked down but continued to burn. Measurements of the decomposition products of the Halon agents demonstrated toxic gas concentrations significantly below levels considered dangerous. Keywords: Aircraft Fire, Extinguishing Agent, Halon, Hand Fire Extinguisher, Fires.

AN (1) AD-A183 423/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft, Calendar Year 1986.

DN (9) Annual rept.

RD (11) 31 Dec 1986

PG (12) 316 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *COMMERCIAL AIRCRAFT
CIVIL AFFAIRS, CIVIL AVIATION, FLEETS(SHIPS), PASSENGER AIRCRAFT,
STATISTICAL DATA, AIRCRAFT CARRIERS, TRANSPORT AIRCRAFT

ID (25) Census

AB (27) This annual publication includes statistical data on the registered
civil fleet, air carrier aircraft, and general aviation aircraft--both
registered and active, detailed reports for general aviation aircraft
by owner's state and county, and registered aircraft by make and model.

AN (1) AD-A188 263/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Airport Activity Statistics of Certificated Route Air Carriers.

DN (9) Rept. for period ending 31 Dec 86.

RD (11) 31 Dec 1986

PG (12) 917 Pages

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *STATISTICAL DATA
AIRCRAFT, AIRPORTS, CARGO, DOMESTIC, INTERNATIONAL, PASSENGERS,
POSTAL

SERVICE, REVENUE SHARING, STATISTICS, TABLES(DATA), AIR TRAFFIC

AB (27) This report furnishes airport activity of the large Certificated Route
Air Carriers. Included in the data contained in Table 6 are passenger
enplanements, tons of enplaned freight, express, and mail. Both
scheduled and non-scheduled service, and domestic and international
operations are included. These data are shown by airport and carrier.
Table 7 includes departure by airport, carrier and type of operation,
and type of aircraft. Keywords: Revenue passenger traffic, Freight
traffic, Express and mail traffic.

AN (1) AD-A188 596/XAG

FG (2) 010500

050300

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS**

TI (6) FAA (Federal Aviation Administration) Cost Recovery Options.

DN (9) Final rept.

RD (11) Dec 1986

PG (12) 52 Pages

RS (14) FAA-APO-87-14

RC (20) Unclassified report

DE (23) *AIRPORTS, *TAXES, *COST ANALYSIS, *FINANCIAL MANAGEMENT
AERONAUTICS, ALLOCATIONS, COSTS, ECONOMICS, EFFICIENCY, FINANCE,
MANAGEMENT, POLICIES, PUBLIC ADMINISTRATION, RECOVERY,
SUPERVISION,

UNITED STATES GOVERNMENT, USER NEEDS, AVIATION SAFETY

AB (27) This document was prepared under the supervision of the Office of
Aviation Policy and Plans of the Federal Aviation Administration (FAA).
It provides technical documentation for the FAA's report, Airport and
Airway Costs: Allocation and Recovery in the 1980's, (FAA-APO-87-7).
This volume evaluates alternative taxes or fees designed to recover
costs allocated to users of the Federal Airport and Airway System.
Alternative taxes are evaluated in terms of safety, economic
efficiency, administrative efficiency, equity, and precedent. Keywords:
Public finance; Cost allocation; Aviation user taxes.

AN (1) AD-A188 675/XAG

FG (2) 050100

010500

170700

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS**

TI (6) Airport and Airway Costs Allocated to the Public Sector 1985-1997.

DN (9) Final rept.

AU (10) Taylor, Daniel E.

Berardino, Frank J.

Tiffany, Frederick

RD (11) Dec 1986

PG (12) 101 Pages

RS (14) FAA-APO-87-13

RC (20) Unclassified report

NO (21) See also AD-A181 628.

DE (23) *AIRPORTS, *AIR TRAFFIC CONTROL SYSTEMS, *COSTS
AIR SPACE, ALLOCATIONS, COST ESTIMATES, INTERNATIONAL AIRPORTS,
POLICIES, CIVIL AVIATION, UNITED STATES GOVERNMENT

AB (27) This document was prepared under the supervision of the Office of
Aviation Policy and Plans of the Federal Aviation Administration (FAA).
It provides technical documentation for the FAA's report, Airport and
Airway Costs: Allocation and Recovery in the 1980s, (FAA-APO-87-7).
This volume describes how the FAA meets its legislated responsibilities
through performing functions which benefit both the aviation community

and public-at-large. It defines and estimates the costs incurred in performing public interest services and providing services to public aviation users. The volume also reports 1985, historical, and projected cost allocation estimates for the public sector. Partial contents: Military Use of FAA Services; Use by Non-Aviators of Weather Data Collected by the FAA; Regulatory Activities Related to Safety, Medicine and the Environment; Costs of Operating Washington National and Dulles International Airports, Civilian, Government Use of National Airspace.

AN (1) AD-A188 684/XAG

FG (2) 050100

170700

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Econometric Cost Functions for FAA Cost Allocation Model.

DN (9) Final rept.

AU (10) Taylor, Daniel E.

Berardino, Frank J.

Bentley, Jerome

Bomberger, Earl

RD (11) Dec 1986

PG (12) 39 Pages

RS (14) FAA-APO-87-15

RC (20) Unclassified report

NO (21) See also AD-A181 628.

DE (23) *COST MODELS, *COSTS, *AIR TRAFFIC CONTROL SYSTEMS AERONAUTICS, ALLOCATIONS, ECONOMETRICS, FINANCE, FLIGHT, POLICIES, PUBLIC ADMINISTRATION, RECOVERY, STATIONS, SUPERVISION, MANAGEMENT,

CIVIL AVIATION, UNITED STATES GOVERNMENT

AB (27) This document was prepared under the supervision of the Office of Aviation Policy and Plans of the Federal Aviation Administration (FAA).

It provides technical documentation for the FAA's report, Airport and Airway Costs: Allocation and Recovery in the 1980s, (FAA-APO-87-7).

This volume provides detailed information on the estimation of econometric cost functions for certain FAA operating sites. These functions relate costs to measures of service provided such as operations handled and pilot briefs prepared. A separate cost function is estimated for each type of FAA site-Air Route Traffic Control Centers, Flight Service Stations, Terminal Radar Approach Controls, and VFR towers-for both 1984 and 1992. Keywords: Public Finance; Cost Recovery; Aviation User Taxes.

AN (1) AD-A188 685/XAG

FG (2) 050100

010500

170700

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Allocation of Future Federal Airport and Airway Costs.

DN (9) Final rept.

AU (10) Taylor, Daniel E.

Berardino, Frank J.

Golaszewski, Richard S.

Greenstein, Ira R.

RD (11) Dec 1986

PG (12) 108 Pages

RS (14) FAA-APO-87-12

RC (20) Unclassified report

NO (21) See also AD-A181 628.

DE (23) *AIRPORTS, *COSTS, *AIR TRAFFIC CONTROL SYSTEMS AERONAUTICS, AIR SPACE, ALLOCATIONS, COST ESTIMATES, FINANCE, PLANNING, PRODUCTIVITY, PUBLIC ADMINISTRATION, RECOVERY, SUPERVISION, UNITED STATES GOVERNMENT

AB (27) This document was prepared under the supervision of the Office of Aviation Policy and Plans of the Federal Aviation Administration (FAA).

It provides technical documentation for the FAA's report, Airport and Airway Costs: Allocation and Recovery in the 1980s, (FAA-APO-87-7).

This volume focuses on the methods used to make future allocations of project FAA costs. It presents projected cost allocation estimates for the period 1988 through 1997. The results reflect the full implementation of the National Air Space Plan (FAA's capital expenditure plan) and the staffing and productivity changes that will result from its implementation. Keywords: Public finance; Cost recovery; Aviation user taxes.

AN (1) AD-A188 695/XAG

FG (2) 050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Allocation of Federal Airport and Airway Costs for FY 1985.

DN (9) Final rept.
AU (10) Taylor, Daniel E.
Berardino, Frank J.
Golaszewski, Richard S.
Greenstein, Ira R.
RD (11) Dec 1986
PG (12) 139 Pages
RS (14) FAA-APO-87-11
RC (20) Unclassified report
NO (21) See also AD-A181 628.
DE (23) *AIRPORTS, *AIR TRAFFIC CONTROL SYSTEMS
AIR TRANSPORTATION, ALLOCATIONS, BUDGETS, COSTS, FINANCE,
RECOVERY,
UNITED STATES GOVERNMENT
AB (27) The purpose of this study is to allocate current and future costs among users of the Federal Aviation Administration's airport and airway system. These cost allocations provide information useful in analyzing user taxes to cover the period 1988 through 1997. The present volume reports the results of the allocation of 1985 FAA costs among users. Estimates of future cost allocations are provided in Volume 2. These estimates indicate that air carriers, general aviation, and public sector users account for 60, 27, and 13 percent of system costs, respectively. Keywords: Budgets; Ramsey pricing; Public finance; Airport and airway system; Cost recovery; Aviation user taxes.

AN (1) AD-A189 470/XAG
FG (2) 050300
120500
010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS
TI (6) Users Manual for FAA Cost Allocation Model.
DN (9) Final rept.
AU (10) Taylor, Daniel E.
Berardino, Frank J.
Gellman, Alexander L.
RD (11) Dec 1986
PG (12) 71 Pages
RS (14) FAA-APO-87-16
RC (20) Unclassified report
AL (22) Availability: Microfiche copies only.

DE (23) *COST MODELS, *USER MANUALS, *MANAGEMENT PLANNING AND CONTROL,
*FINANCIAL MANAGEMENT
AERONAUTICS, ALLOCATIONS, COSTS, DATA BASES, FINANCE, POLICIES, PUBLIC
ADMINISTRATION, RECOVERY, SUPERVISION, TAXES, USER NEEDS
AB (27) This document was prepared under the supervision of the Office of Aviation Policy and Plans of the Federal Aviation Administration (FAA). It provides technical documentation for the FAA's report, 'Airport and Airway Costs: Allocation and Recovery in the 1980s,' (FAA-APO-87-7). This volume provides a brief overview of the Cost Allocation Model and instructions on how to use the model. Individual files and data bases comprising the model are also described. Keywords: Public finance, Airport and airway system, Cost allocation, Cost recovery, Aviation user taxes.
25

AN (1) AD-P005 440/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEM STUDIES AND COOPERATIVE PROGRAMS
TI (6) FANS (Future Air Navigation Systems) - A U.S. Perspective
AU (10) Poritsky, S. B.
RD (11) Dec 1986
PG (12) 7 Pages
RC (20) Unclassified report
NO (21) This article is from 'Efficient Conduct of Individual Flights and Air Traffic or Optimum Utilization of Modern Technology for the Overall Benefit of Civil and Military Airspace Users. Conference Proceedings of the Symposium of the Guidance and Control Panel (42nd) Held in Brussels, Belgium on 10-13 June 1986,' AD-A182 150, p12-1-12-7.
DE (23) *NAVIGATION, *AIR TRAFFIC CONTROL SYSTEMS
GLOBAL, CIVIL AVIATION, MILITARY AIRCRAFT, SATELLITE COMMUNICATIONS, INFORMATION TRANSFER, DIGITAL COMMUNICATIONS, SURVEILLANCE, AUTOMATIC,
UNITED STATES
ID (25) Component Reports, FANS(Future Air Navigation Systems), CNS(Communication Navigation and Surveillance), Air navigation
AB (27) This paper traces the development of a worldwide effort to establish aviation requirements for CNS(Communication Navigation and Surveillance) systems for the future, with special emphasis on satellite technologies. Beginning with the air traffic services

modernization satellite technologies. Beginning with the air traffic services modernization efforts underway in several countries, the paper reports on the evolution of the ICAO Future Air Navigation Systems (FANS) Committee, the U.S. Radio Technical Commission for Aeronautics effort to support the development of a U.S. view and the realities which must be faced in considering the definition of new systems and new approaches. The paper describes the activities of FANS to date, the approach being taken to achieve a worldwide minimum satellite communications system standard, and efforts to achieve agreement on automatic dependent surveillance.

AN (1) AD-P005 448/XAG

FG (2) 170703

010600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Microwave Landing System (MLS) Area Navigation: Computed Centerline Experiments and System Accuracy Analyses in an RF Environment

AU (10) Remer, James H.

Billmann, Barry R.

RD (11) Dec 1986

PG (12) 17 Pages

RC (20) Unclassified report

NO (21) This article is from 'Efficient Conduct of Individual Flights and Air Traffic or Optimum Utilization of Modern Technology for the Overall Benefit of Civil and Military Airspace Users. Conference Proceedings of the Symposium of the Guidance and Control Panel (42nd) Held in Brussels, Belgium on 10-13 June 1986,' AD-A182 150, p41-1-41-17.

DE (23) *APPROACH, *MICROWAVE LANDING SYSTEMS
AIR TRAFFIC CONTROL TERMINAL AREAS, NAVIGATION, THREE DIMENSIONAL, HELICOPTERS, ACCURACY

ID (25) Component Reports, RNAV(Area Navigation), TERPS(Terminal Area Instrument Approach Procedures)

AB (27) The Time Reference Scanning Beam (TRBS) MLS will supplant the existing instrument landing system as the recognized international standard as early as 1995. MLS provides the ability to determine the aircraft's position in three dimensional space over a large coverage volume in the airport terminal area. The use of this capability to navigate and execute approaches throughout this volume of coverage results with the application of a technique known as Microwave Landing System Area Navigation (MLS RNAV) . Applications of MLS RNAV can be as simple as executing approaches offset from but parallel to the MLS 0 deg azimuth or as complex as multi-segment and curved path approaches. MLS RNAV is

particularly adaptable to helicopter operations. Allowing approaches to helicopters located away from the main instrumented runway. To assess and further develop the potential capabilities of MLS RNAV, the FAA Technical Center; performing analytical studies, as well as developing a prototype MLS RNAV system.

AN (1) AD-P005 453/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS ENGINEERING SERVICE

TI (6) Philosophy of Applying Automation to Air Traffic Control

AU (10) Page, Leland F.

RD (11) Dec 1986

PG (12) 3 Pages

RC (20) Unclassified report

NO (21) This article is from 'Efficient Conduct of Individual Flights and Air Traffic or Optimum Utilization of Modern Technology for the Overall Benefit of Civil and Military Airspace Users. Conference Proceedings of the Symposium of the Guidance and Control Panel (42nd) Held in Brussels, Belgium on 10-13 June 1986,' AD-A182 150, p53-1-53-3.

DE (23) *AIR TRAFFIC CONTROL SYSTEMS
AUTOMATION

ID (25) Component Reports

AB (27) This paper summarizes the objectives of the U.S. program for applying automation to air traffic control systems, progress thus far, and plans for the future.

AN (1) AD-A174 697/XAG

FG (2) 010301

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM ENGINEERING AND MAINTENANCE SERVICE

TI (6) FAA Helicopter/Heliport Research, Engineering, and Development Bibliography, 1964-1986.

DN (9) Final rept.

AU (10) Smith, Robert D.

RD (11) Nov 1986

PG (12) 169 Pages

RS (14) DOT/FAA/PM-86/47

RC (20) Unclassified report

DE (23) *HELICOPTERS, *HELIPORTS

BIBLIOGRAPHIES, DOCUMENTS, LIMITATIONS

AB (27) This bibliography was assembled as an aid for those who are interested in the helicopter/helicopter research, engineering, and development. In selecting documents to be included in this report, two limitations were observed. First, the documents are specifically related, in whole or in part, to helicopter operations. Second, they are limited to documents in which the research, engineering, and development elements (i.e., the ADL complex) of the FAA have been involved as sponsors, participants, or authors. Citations include abstracts. Author and subject indexes are provided.

AN (1) AD-A175 790/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Recurring rept. 1 Jan-30 Jun 86.

RD (11) 17 Nov 1986

PG (12) 22 Pages

RS (14) DOT/FAA/ACS-86-1(24)

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *SECURITY

AERONAUTICS, AIR TRANSPORTATION, AIRCRAFT CABINS, AIRPORTS, CONGRESS,

FOREIGN, PASSENGERS, REGULATIONS, REPORTS, UNITED STATES GOVERNMENT

AB (27) This report provides details on the effectiveness of security screening of passengers and all property intended to be carried in the aircraft cabin in air transportation or intrastate air transportation. It also provides a statistical summary of aircraft hijackings and alleged violations of Federal Aviation regulations pertaining to security screening. In addition, the report presents a summary of the assessments conducted to determine the effectiveness of the security measures at foreign airports as required by Section 1115 of the Federal Aviation Act of 1958, as amended.

AN (1) AD-A178 389/XAG

FG (2) 170703

250300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Signal Coverage and Characteristics of the Atlantic City Heliport MLS (microwave Landing System).

DN (9) Technical note for period ending Sep 86

AU (10) Billman, Barry R.

Gallagher, Donald

Wolf, Christopher

Morrow, John

Shollenberger, Scott

RD (11) Nov 1986

PG (12) 76 Pages

RS (14) DOT/FAA/CT-TN86/40

RC (20) Unclassified report

DE (23) *MICROWAVE LANDING SYSTEMS, *SIGNALS, *HELIPORTS

AERONAUTICS, CONTROL, ELEVATION, ESTIMATES, LIMITATIONS, MOTION, NOISE,

PERFORMANCE(ENGINEERING), REQUIREMENTS, STATISTICAL ANALYSIS, TOLERANCE, UNITED STATES GOVERNMENT

AB (27) During the late fall of 1985 and the winter of 1986 test flights were conducted at the Federal Aviation Administration (FAA) Technical Center's Heliport at Atlantic City International Airport, N.J. The purpose of these flights was to verify signal coverage of the Microwave Landing System (MLS) collocated at the heliport. Other activities included the measurement of the signal characteristics of the Hazeltine Model 2400 MLS which was installed at the heliport. Elevation and azimuth course widths were determined and, using classical Z transform techniques, statistical estimates of control motion noise and path following error were obtained. These estimates were compared with the FAA Standard for Interoperability and Performance Requirements of MLS. Results obtained were excellent. Tolerance limits were consistently met. The data revealed that wide beam width antenna systems when installed at heliports can meet specification tolerances contained in the FAA specification for MLS Interoperability and Performance Requirements.

AN (1) AD-A175 407/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of Sikorsky S-76A 24 Missed Approach Profiles Following Precision MLS Approaches to a Helipad at 40 KIAS (Knots Indicated Airspeed) .

DN (9) Technical note. Aug 85-Jul 86
AU (10) Webb, Michael M.
RD (11) Oct 1986
PG (12) 100 Pages
RS (14) DOT/FAA/CT-TN86/31
CT (15) T0701B
RC (20) Unclassified report
DE (23) *APPROACH, *MICROWAVE LANDING SYSTEMS, *INSTRUMENT LANDINGS ACCEPTABILITY, AIRSPEED, DECISION MAKING, EXPERIMENTAL DATA, FLIGHT TESTING, GROUND LEVEL, HEIGHT, HELICOPTERS, INSTRUMENTATION, LOSSES, PATTERNS, QUALITY, SURFACES, TEST AND EVALUATION, TEST FACILITIES, WORKLOAD, PRECISION, HELIPADS, GLIDE PATH SYSTEMS
ID (25) S-76 Aircraft, TERPS(Terminal Instrument Procedures), Decision Heights, Helicopter Landings
AB (27) This report describes the trend analysis evaluation of the Sikorsky S-76A missed approach profiles following precision microwave landing system (MLS) approaches at glidepath angles of 3 deg, 6 deg, and 7.5 deg at a minimum instrument meteorology conditions airspeed (V sub mini) of 40 knots indicated airspeed (KIAS). It describes the flight test facilities, methodology, and addresses topics such as how flight test data are collected and what is done with it. It also describes each of the helicopter procedures flown during the project and provides an analysis of the pilots subjective opinions concerning the acceptability and workload associated with these procedures. It was concluded that the trend indicates that no current terminal instrument procedures (TERPS) criteria would be violated by reducing V sub mini to 40 KIAS. The plots indicated that there were no penetrations of the 20:1 surface missed approach surface. The maximum deviation allowed by TERPS for the height loss at missed approach rises along a 20:1 plane which begins at the surface or 250 feet below surface began at ground level. At most, only a 40-foot fly under at decision height (DH) was noticed during the 24 missed approaches flown. However, this information should be considered indicative rather than conclusive due to the small sample size (24 approaches). Additional testing would be required to provide TERPS quality data.

AN (1) AD-A176 997/XAG
FG (2) 210400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Development of a Large-Scale Antimisting Kerosene Blender.
DN (9) Final rept. Sep 82-Dec 84

AU (10) Byrnes, H. S.
RD (11) Oct 1986
PG (12) 58 Pages
RS (14) DOT/FAA/CT-86/11
RC (20) Unclassified report
DE (23) *FUEL ADDITIVES, *KEROSENE AIRCRAFT, AIRCRAFT FIRES, ANTIFOGGING AGENTS, AVIATION SAFETY, COMPATIBILITY, DEGRADATION, FUELS, WATER, BLENDING
ID (25) Antimisting Fuels
AB (27) Development of a large-scale inline antimisting kerosene (AMK) blender was undertaken to demonstrate the feasibility of inline blending on a scale that would be representative of in-service use requirements. Inline blending was developed as means of circumventing problems that would be encountered with the use of batch-blended AMK, including: (1) unintentional degradation, (2) bulk water incompatibility, (3) filtering difficulties, and (4) self life. The development of the large-scale blender is traced from the laboratory-scale blender (1/2 gpm), through the continuous inline blender (10 gpm), and the intermediate blender (5 to 25 gpm). All the iterations of each unit that lead to the final configuration of the large-scale blender, which successfully performed the objective, are presented. Keywords: Antimisting Fuel, Aircraft Safety, Aircraft Fires, Blender.

AN (1) AD-A176 752/XAG
FG (2) 170900
250300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE
TI (6) Air Traffic Control Radar Beacon System Transponder Performance Study and Analysis. Volume 1. Transponder Test Methodology Results, Analysis, and Recommendations.
DN (9) Final rept.
RD (11) Sep 1986
PG (12) 43 Pages
RS (14) DOT/FAA/FS-86/1-VOL-1
RC (20) Unclassified report
DE (23) *AIR TRANSPORTATION, *POSITION(LOCATION), *TRANSPONDERS, *DATA ACQUISITION PLANNING, TEST AND EVALUATION, GEORGIA, PATTERNS, CALIBRATION, PARTS, TEST METHODS, FLIGHT TESTING, VALIDATION
AB (27) This report contains the description and results of the Air Traffic Control Radar Beacon System (ATCRBS) Transponder Study and Analysis.

This study represents a two year effort consisting of testing, data collection, and analysis of air carrier, military, and a detailed analysis of general aviation transponder performance. The ATRCBS Analysis Team developed a comprehensive test plan which included a validation flight test program, an evaluation of transponder maintenance and calibration programs, and a detailed analysis of general aviation transponder performance. The study was concentrated in the Atlanta, Georgia area. However, data was collected from many parts of the country. The Mobile Transponder Performance Analyzer (MTPA), developed by the FAA Technical Center, was dispatched to field locations in order to support the data collection and analysis tasks. This effort resulted in identifying a trend of problems associated with the general aviation transponder.

AN (1) AD-A177 582/XAG

FG (2) 140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE

TI (6) Air Traffic Control Radar Beacon System Transponder Performance Study and Analysis. Volume 2. Appendixes.

DN (9) Final rept.

RD (11) Sep 1986

PG (12) 395 Pages

RS (14) DOT/FAA/FS-86/1-VOL-2

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A176 752.

AL (22) Availability: Document partially illegible.

DE (23) *FLIGHT TESTING, *TRANSPONDERS

HIGH ALTITUDE, ANALYZERS, MOBILE, TEST FACILITIES, TRANSPONDERS, PLANNING, VALIDATION, INVENTORY, TEST METHODS, PROFILES

AB (27) Contents: Flight Test Validation Plan, Atlanta Terminal Test Flight Profile, Atlanta/Jacksonville High Altitude en Route Test Flight Profile, Honolulu Terminal Test Flight Profile, Honolulu ARTCC High Altitude Test Flight Profile, COMDIG Summary, Analysis of Test Facilities and Transponders, Inventory of APX-64 Transponder Equipped Aircraft, Mobile Transponder Performance Analyzer Report, New Manufactured Transponder Test Results, Summary of Mobile Transponder Performance Analyzer Reports 1975-1985, and Glossary.
23

AN (1) AD-A183 624/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA (Federal Aviation Administration) Air Traffic Activity FY 1986.

DN (9) Statistical rept. 1 Oct 85-30 Sep 86

AU (10) Trembley,Nancy

RD (11) 30 Sep 1986

PG (12) 230 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL TERMINAL AREAS, *AIRPORT CONTROL TOWERS AIR TRAFFIC, FLIGHT, STATIONS, CONTROL CENTERS, INTERNATIONAL, AIR TRAFFIC CONTROL SYSTEMS, APPROACH, TABLES(DATA)

ID (25) FSS(Flight Service Station), ATCTS(Airport Traffic Control Towers)

AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTS), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), International Flight Service Stations (IFSSs), Approach Control Facilities, and FAA contract-operated control towers. Keywords: Tables(Data).

AN (1) AD-A172 305/XAG

FG (2) 120300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM ENGINEERING AND MAINTENANCE SERVICE

TI (6) Characteristics of Altitude Error at Reduced Quantization.

DN (9) Final rept.

AU (10) Wong,Gene A.

RD (11) Aug 1986

PG (12) 34 Pages

RS (14) DOT/FAA/PM-86/35

RC (20) Unclassified report

DE (23) *ALTIMETERS, *ERRORS, *QUANTIZATION AIRCRAFT, ALTITUDE, COLLISION AVOIDANCE, COMPUTER PROGRAMS, INPUT, ONBOARD, REDUCTION, STANDARD DEVIATION, STATISTICS, WARNING SYSTEMS,

AIR TRAFFIC CONTROL SYSTEMS, STATISTICAL DISTRIBUTIONS

ID (25) TCAS(Traffic Alert and Collision Avoidance Systems), Altimetry, *Altitude errors

AB (27) This report describes an analysis of the impact of reducing the

quantization level on the altitude error produced by the aircraft's altimetry system. Specifically, the mean and the standard deviation of the altitude error at the output of the aircraft's onboard quantization device are derived assuming altitude error at its input is normally distributed. The formulae derived are very general, exact, and applicable to all ranges of input statistics and quantization levels. A computer program has been written to evaluate the impact of reduced quantization levels. Additionally, a comparison is made between the commonly used and approximate uniform distribution model method and the exact formulae derived in this report for calculating the quantized altitude error. Keywords: TCAS(Traffic Alert and Collision Avoidance Systems).

AN (1) AD-A173 860/XAG

FG (2) 130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) An Investigation of the FAA Vertical Bunsen Burner Flammability Test Method.

DN (9) Final rept.

AU (10) Cahill,Pat

RD (11) Aug 1986

PG (12) 24 Pages

RS (14) DOT/FAA/CT-86/22

RC (20) Unclassified report

DE (23) *BURNERS, *FLAMMABILITY

TEST METHODS, THERMOCOUPLES, WIRE, THICKNESS, AVIATION SAFETY, TEMPERATURE, POSITION(LOCATION)

ID (25) *Bunsen burners

AB (27) The vertical Bunsen burner test method, as specified in appendix F of the Federal Aviation Regulations-Part 25, was evaluated in order to update and clarify certain problem areas. Burner fuel, flame temperature and flame placement were investigated. It was determined that (1) methane gas can be used as a replacement or alternative to B-gas, (2) a minimum flame temperature specification is meaningless without specifying thermocouple wire thickness, and (3) placing the flame at the midpoint of the lower edge of the front face results in a more realistic and severe evaluation of the specimen's flammability properties.

AN (1) AD-A175 232/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Siting, Installation, and Operational Suitability of the Automated Weather Observing System (AWOS) at Heliports.

DN (9) Final rept. Feb 85-Apr 86

AU (10) Matos,Rene' A.

Sackett,John R.

Shuster,Philip

Weiss,Rosanne M.

RD (11) Aug 1986

PG (12) 66 Pages

RS (14) DOT/FAA/CT-86/9

RN (18) DOT/FAA/PM-86/30

RC (20) Unclassified report

DE (23) *WEATHER STATIONS, *METEOROLOGICAL INSTRUMENTS AUTOMATION, HELIPORTS, WEATHER, AUTOMATIC

ID (25) *AWOS (Automated Weather Observing System)

AB (27) An automated Weather Observing System (AWOS) was installed at the Federal Aviation Administration (FAA) Technical Center's Interim Concept Development Heliport. This was done in order to evaluate the siting, installation, and operational suitability of the AWOS at a heliport. The principal recommendations of this report have been incorporated in FAA advisory Circular (AC) 150/5220-16, Automated Weather Observing Systems (AWOS) for Non-Federal applications. (Author)

AN (1) AD-A169 880/XAG

FG (2) 120600

240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) A Preliminary Assessment of Pollution from Passenger Cars and Buses at Stapleton International Airport

AU (10) Segal,H. M.

RD (11) Jul 1986

PG (12) 13 Pages

RS (14) FAA-EE-86-7

RC (20) Unclassified report

DE (23) *AIR POLLUTION, *EMISSION CONTROL

PASSENGER VEHICLES, AUTOMOTIVE VEHICLES, INTERNATIONAL AIRPORTS, ENVIRONMENTAL PROTECTION, MICROCOMPUTERS, GROUND TRAFFIC,

CARBON

MONOXIDE, WIND VELOCITY, WIND DIRECTION, TEMPERATURE

AB (27) This report summarizes the results of an air quality modeling exercise for Stapleton International Airport. The analysis identifies the impact of automobiles and mini-buses on air quality at the airport. Concentrations of Carbon Monoxide were estimated at seven receptors placed at critical locations in the terminal area. The Graphical Input Microcomputer Model was used in this screening analysis. The following assumptions were used in the analysis: (1) vehicle activity = maximum; (2) wind speed = 1 meter per second; (3) wind directions = 270 and 240 degrees; (4) temperature = 0 degrees F; and (5) Pasquill/Gifford stability class was D. The maximum one hour concentration at the most critical receptor was 26 mg/m3. The one hour National Ambient Air Quality Standard for Carbon Monoxide is 40 mg/m3.

AN (1) AD-A171 641/XAG

FG (2) 010305

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF FLIGHT OPERATIONS

TI (6) Task Force Report on Emergency Evacuation of Transport Airplanes. Volume 1. Summary report.

DN (9) Final rept.

RD (11) Jul 1986

PG (12) 108 Pages

RS (14) DOT/FAA/VS-86/1-1

RC (20) Unclassified report

DE (23) *TRANSPORT AIRCRAFT, *EVACUATION

EMERGENCIES, EXITS, FLIGHT CREWS, PASSENGERS, AVIATION SAFETY, ESCAPE

SYSTEMS, AVIATION INJURIES, SMOKE, TOXIC HAZARDS, FLIGHT TRAINING

AB (27) This is one of two volumes that report on the study of the emergency evacuation of transport airplanes that was sponsored by the Federal Aviation Administration (FAA). The study included the September 1985 Public Technical Conference and the public meetings of the three technical working groups formed during the conference as part of a task force effort. The working groups are: Design and Certification, Training and Operations, and Maintenance and Reliability. The task force program focused on the reassessment of existing Federal Aviation Regulations pertaining to emergency evacuation. Topics considered in the study include: evacuation demonstrations; emergency exits; evacuation slide certification, inspection, and maintenance; emergency equipment; crewmember training and duties; passenger safety information; air carrier operations; and others. Volume I, Summary Report, summarizes the issues considered during the study and the outcome of those issues. Volume II, Supporting Documentation, contains

meeting reports, formal presentation papers, and other documents on which the summary report is based. (Author)

AN (1) AD-A172 256/XAG

FG (2) 230600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF FLIGHT OPERATIONS

TI (6) Task Force on Emergency Evacuation of Transport Airplanes. Volume 2. Supporting Documentation.

DN (9) Final rept.

RD (11) Jul 1986

PG (12) 474 Pages

RS (14) DOT/FAA/VS-86-1

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *EVACUATION, *TRANSPORT AIRCRAFT

EMERGENCIES, RELIABILITY, AVIATION SAFETY, PASSENGER AIRCRAFT, COMMERCIAL AIRCRAFT, ESCAPE SYSTEMS, EXITS, SLIDING, FLIGHT CREWS, REGULATIONS

ID (25) Emergency evacuation, Aircraft evacuation, Flight attendants

AB (27) This is volume II of two volumes that report on the study of the emergency evacuation of transport airplanes that was sponsored by the Federal Aviation Administration (FAA). The study included the Public Technical Conference held by the FAA in September 1985 and the public meetings of the three technical working groups that were formed during the conference as part of a task force effort to coordinate the program. The working groups are: Design and Certification, Training and Operations, and Maintenance and Reliability. Contents: List of hearings, conferences, and Meetings--Places and Dates; Federal Register Announcement of Public Technical Conference; Attendance List for Public Technical Conference; Summary of Congressional Hearing and Public Technical Conference; Formal Presentations of the Public Technical Conference; Working Group Interim Reports and Background Information. 23

AN (1) AD-A173 292/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Sleep Loss on Vestibular Response during Simple and Complex Vestibular Stimulation.

DN (9) Final rept.
AU (10) Collins, William E.
RD (11) Jul 1986
PG (12) 20 Pages
RS (14) DOT/FAA/AM-86/9
RC (20) Unclassified report
DE (23) *VESTIBULAR APPARATUS, *SLEEP DEPRIVATION
AMPHETAMINES, CORIOLIS EFFECT, DRUGS, NYSTAGMUS, RESPONSE,
STIMULATION(GENERAL), MOTION SICKNESS, ACCELERATION, DECELERATION,
AVIATION MEDICINE, PILOTS, CLIMBING, DIVING, HEAD(ANATOMY), GROUP
DYNAMICS
ID (25) Vestibular Stimulation, Aviation
AB (27) Few data are available concerning the effects of sleep loss on
vestibular responses although those responses are significant products
of motion in aviation environments. This study assessed periodically
throughout approx.55 hrs. of sleep loss the ocular nystagmus and motion
experiences of men exposed to both simple (angular acceleration and
complex (Coriolis) vestibular stimulation. The effects on those
responses of an alerting drug administered after 54 hr of sleep loss
were also examined. Control and sleep-deprived groups each comprised 10
young men. Angular accelerations and Coriolis stimulation (30-deg head
movements during CW rotation) were accomplished in an enclosed
Stille-Werner rotating device. Nystagmus and motion experience
(turning, diving, and climbing) were recorded throughout each session.
Tests were given at 0900 and 1300 on each of 3 successive days.
Subjects ingested 10-mg of d-amphetamine at 1200 on day 3. During
simple stimulation, the sleep-deprived group showed regular declines
across sessions in slow phases and duration measures of nystagmus but
fast phase ocular frequency and measures of experienced turning
resisted declines until the final predrug session; response latencies
increased with sleep loss. Declines during rotation for ocular
(climbing sensation) were obtained for the sleep deprived, but both
nystagmus and sensations were unaffected d-amphetamine had no
consistent effect on either the ocular or subjective responses of
control subjects, but significantly increased nystagmus and elevated
(but not significantly) measures of turning experiences for the sleep
deprived.

AN (1) AD-A174 091/XAG
FG (2) 210400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) AVGAS/AUTOGAS (Aviation Gasoline/Automobile Gasoline) Comparison.

Winter Grade Fuels.

DN (9) Interim rept.
AU (10) Ferrara, Augusto M.
RD (11) Jul 1986
PG (12) 59 Pages
RS (14) DOT/FAA/CT-86/21
RC (20) Unclassified report
DE (23) *AVIATION GASOLINE, *VAPOR LOCK, *AUTOMOTIVE FUELS
GASOLINE, COMPARISON, AIRCRAFT ENGINES, BOILING POINT, VAPOR
PRESSURE,
DETONATIONS, FLOW RATE, WINTER, WEATHERING, AGING(MATERIALS),
DETERIORATION, DYNAMOMETERS, TEST AND EVALUATION
ID (25) *Automobile gasoline, General aviation aircraft, Octane number, Reid
vapor pressure, Soured fuel, Weathered fuel, Lycoming O-320 engines
AB (27) This report describes dynamometer tests which simulated conditions
found in a general aviation aircraft. In these tests, automobile
gasoline was tested and compared with aviation gasoline. The tendency
for vapor lock and detonation was measured as a function of gasoline
grade, Reid Vapor Pressure, and the age of the fuel.

AN (1) AD-A176 040/XAG
FG (2) 010301
250300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Rotorcraft TCAS (Traffic Alert and Collision Avoidance System)
Evaluation Group 2 Results.
DN (9) Technical note Oct-Nov 85
AU (10) Rehmann, Albert J.
RD (11) Jul 1986
PG (12) 59 Pages
RS (14) DOT/FAA/CT-TN86/24
RC (20) Unclassified report
AL (22) Availability: Document partially illegible.
DE (23) *AIRCRAFT ANTENNAS, *COLLISION AVOIDANCE, *ROTARY WING AIRCRAFT,
*TRANSPONDERS, *RECEIVERS
ANTENNAS, BEARINGS, BOOMS(EQUIPMENT), BOTTOM, INSTALLATION, NOSES,
PERFORMANCE(ENGINEERING), SPECIFICATIONS, TAIL ASSEMBLIES
AB (27) This report contains results of Group 2 testing of a Traffic Alert and
Collision Avoidance System (TCAS) installation in a Sikorsky S-76. Of
the three groups in the S-76 TCAS evaluation effort, Group 2 was the
most substantive because the important work of specifying the
characteristics of the antenna installation and the particular effects

of multipath were both accomplished. Transmitter and receiver specifications were also developed. Two antenna sites, one atop the nose and one on the underside of the tail boom, were evaluated. Each site is a suitable location for a single antenna TCAS. The bottom antenna has better bearing performance and slightly better coverage, while the top antenna is far less corrupted by multipath. Relative merits of each antenna will be further evaluated. Through examination of flight data, a three-step multipath elimination algorithm was developed. It will be implemented and evaluated as part of Group 3 flight data reduction. Minimum transmit power and receiver sensitivities were specified, based on a 90% probability of reply and a target range of 4 miles forward and 2.8 miles rearward. Effects of general aviation transponder characteristics and TCAS antenna patterns were also considered. Keywords: Aircraft antennas, Rotary wing aircraft.

23

AN (1) AD-A221 225/XAG

FG (2) 150500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) National Airspace Integrated Logistics Support (NAILS) Master Plan. Sanitized.

RD (11) Jul 1986

PG (12) 57 Pages

RC (20) Unclassified report

DE (23) *LOGISTICS

DATA PROCESSING, LIFE CYCLES, PLANNING, REQUIREMENTS

AB (27) The National Airspace Integrated Logistics Support (NAILS) Master Plan provides requirements and task descriptions governing the implementation of a NAILS program during the life cycle of the National Airspace System (NAS) equipment. The goal of this plan is to develop a single, uniform approach for conducting those activities necessary to (1) cause supportability requirements to be an integral part of system requirements and design, (2) define support requirements that are optimally related to the design and to each other, (3) define the required support during the operational phase, and (4) prepare attendant data products. Keywords: Logistics. (jes)

AN (1) AD-A171 361/XAG

FG (2) 131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Halon Extinguisher Agent Behavior in a Ventilated Small Aircraft.

DN (9) Final rept. Mar-Jul 84

AU (10) Slusher,G. R.

Wright,J.

Demaree,J. E.

RD (11) Jun 1986

PG (12) 60 Pages

RS (14) DOT/FAA/CT-86/5

RC (20) Unclassified report

DE (23) *FIRE EXTINGUISHING AGENTS, *TETRAFLUOROETHYLENE RESINS, *SAFETY

FIRE EXTINGUISHERS, HAND HELD, TEST AND EVALUATION, AIRCRAFT, DISSIPATION, RATES, TOXICITY, CONCENTRATION(COMPOSITION), DOSAGE, LIMITATIONS, STRATIFICATION, VENTILATION

ID (25) Tetrafluoroethylene polymers

AB (27) Hand held fire extinguishers (Halon 1211 and Halon 1301) were evaluated in a four-passenger Cessna Model 210C aircraft. The aircraft was operated in the FAA's Technical Center airflow facility under simulated flight conditions. Extinguishers were discharged without fires to determine the dissipation rate and toxicity levels of Halon extinguishing agents. Agent concentrations dissipated rapidly. Analysis of dose calculations demonstrated that 2.5 pound Halon 1211 and 3.0 pound Halon 1301 extinguishers were safe in the four-passenger test aircraft. Dose calculations for the pilot were a maximum of 60 percent of the limit for halon 1211, and maximum dose was 31 percent of the limit for Halon 1301. Stratification of the Halons together with cabin ventilation resulted in safe conditions for the pilot. Distribution of extinguishing agents under the instrument panel was investigated. When the extinguishers were discharged on either the pilot's or the copilot's side, four percent concentration was measured on the side opposite of the discharge of the extinguishers. Extinguisher gas stratification was determined by measuring agent levels on the cabin floor.

AN (1) AD-A171 485/XAG

FG (2) 050600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Flight Service Station Training Program: 1981-1985.

DN (9) Final rept.

AU (10) Convey,John J.

RD (11) Jun 1986

PG (12) 18 Pages
RS (14) DOT/FAA/AM/86-6
RC (20) Unclassified report
DE (23) *FLIGHT TRAINING

PILOTS, PERFORMANCE(HUMAN), SKILLS, MILITARY EXERCISES, INFLIGHT, SCORING, EMERGENCIES, STATIONS, SPECIALISTS

AB (27) this report describes the performance of the ATC classes in the Flight Service Station Training Program 1981 to 1985 on the skills tests and laboratory exercises in Preflight (pilot briefing), Inflight, and Emergency Services. Over 80% of the final grade for the program is based on these measures. The average scores of the classes on the skills tests, especially on Inflight, have increased from 1981 to 1985. The different forms of both the Preflight test and the Emergency Services test appear to be equivalent as intended; however, Form G and Form H of the Inflight test are easier than Form D and Form E. The average scores of the classes on the laboratory constant from 1981 to 1985; however, the averages on the Inflight laboratory exercises have declined steadily. Overall, these classes have performed better on the skills tests and laboratory exercises, except for Inflight, than did the reference classes of 1978 and 1979.

AN (1) AD-A173 244/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Medically Disqualified Airline Pilots.

DN (9) Final rept.

AU (10) Dark, Shirley J.

RD (11) Jun 1986

PG (12) 18 Pages

RS (14) DOT/FAA/AM-86/7

RC (20) Unclassified report

DE (23) *MEDICAL EXAMINATION, *AVIATION MEDICINE, *PILOTS AGING(PHYSIOLOGY), MEDICAL RESEARCH, NEUROPHYSIOLOGY, CORONARY DISEASE,

SIGNS AND SYMPTOMS, CARDIOVASCULAR DISEASES, ALCOHOLISM, FAILURE, COMMERCIAL AVIATION, QUALIFICATIONS, HIGH RATE, RECORDS

ID (25) Disqualification

AB (27) This study presents comprehensive data reflecting pertinent denial rates regarding the medical and general attributes of those airline pilots denied medical certification in calendar years 1983 and 1984. The overall annual denial rate of this group is 4.7 per 1,000 active

airline pilots. Age-specific denial rates for airline pilots increase to the highest rate at age interval 55-59. The most significant causes for denial are cardiovascular, neuropsychiatric, and the miscellaneous category. The importance of these causes for denial, particularly above age 45, is again recognized. Denials for cardiovascular reasons account for 33% of all denials in this airline pilot group. Reasons/causes for denial and age-specific denial rates are changing. Denial rates of older pilots have decreased while rates for younger pilots have increased when compared with previous studies' rates. This could be attributed to changes in the interpretation of FAA regulations, certification policies, and pilots' concepts and concerns regarding the economic status of their employer. On the basis of these and previous findings, pilots should be educated to report history or symptoms of any disease during their periodic medical certification examinations.

AN (1) AD-A173 861/XAG

FG (2) 010305
010310

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Crashworthiness Experiment Summary - Full-Scale Transport Controlled Impact Demonstration Program.

DN (9) Final rept. Jun 81-Dec 85

AU (10) Johnson, D.
Garodz, L.

RD (11) Jun 1986

PG (12) 638 Pages

RS (14) DOT/FAA/CT-85/20

RC (20) Unclassified report

DE (23) *CRASHWORTHINESS, *JET TRANSPORT AIRCRAFT AIR TO SURFACE, IMPACT TESTS, REMOTELY PILOTED VEHICLES, FUSELAGES, COMPUTER PROGRAMS, FIRE SAFETY, AIRCRAFT CABINS, AIRCRAFT SEATS, RESTRAINT, AVIATION ACCIDENTS, ACCIDENT INVESTIGATIONS, FLIGHT RECORDERS, DATA ACQUISITION, LANDING IMPACT

ID (25) Antimisting fuels, KRASH computer program

AB (27) On December 1, 1984, the Federal Aviation Administration (FAA), and the National Aeronautics and Space Administration (NASA), conducted an air-to-ground impact test demonstration with a remotely piloted jet transport category airplane. This demonstration, identified as the Full-Scale Transport Controlled Impact Demonstration (CID) Program, was the culmination of four years of effort by the two agencies. The major FAA objectives included the demonstration of antimisting fuel and a series of fire safety and structural type crashworthiness experiments.

The NASA, demonstration objectives also extended to the crashworthiness experiment area. This report provides a summary of the FAA structural experiments which included an instrumented fuselage structure and an associated analytical KRASH model, on-board seat/cabin restraint and flight data recorder system installations, and a post-impact accident investigation exercise. The summary contains a description of each experiment, related pre- post-test activities, and resulting test data.

AN (1) AD-A174 129/XAG

FG (2) 010301

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Levels from Urban Helicopter Operations, New Orleans, Louisiana

AU (10) Albersheim, Steven R.

RD (11) Jun 1986

PG (12) 40 Pages

RS (14) FAA-EE-86-04

RC (20) Unclassified report

DE (23) *AIRCRAFT NOISE, *HELICOPTERS

MEASUREMENT, FLIGHT PATHS, MONITORING, AIRPORTS, LOUISIANA, URBAN AREAS, SURVEYS, DATA ACQUISITION, AIRCRAFT LANDINGS, HIGH FREQUENCY

AB (27) The FAA conducted a noise monitoring program of helicopter operations at the Lakefront Airport in New Orleans, Louisiana. The purpose was to obtain noise measurements from helicopter operations in an urban environment. During this monitoring program the FAA concentrated solely on helicopter approaches to Lakefront Airport. The noise data collected and classified as survey type data, since the monitoring program's measurements data obtained were from 'target of opportunity' as opposed to a 'controlled test' when the helicopter follow predefined flight path profiles. During the testing period, there were ten different helicopter models. Because of the high frequency of operations an opportunity was provided to determine the consistency between ALM values for the same helicopter model for different events. Since some of the monitoring sites were located in a residential community, an opportunity was provided to gather information on noise levels associated with a high frequency of helicopter operations.

AN (1) AD-B225 674/XAG

FG (2) 010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Heliport Electroluminescent (E-L) Lighting System Preliminary Evaluation.

DN (9) Technical note

AU (10) Jones, Paul

RD (11) Jun 1986

PG (12) 9 Pages

RS (14) DOT/FAA/CT-TN86/22, DOT/FAA/CT-ACT-310

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *APPROACH LIGHTS, *NIGHT LANDINGS

ELECTROLUMINESCENCE, LIGHTING EQUIPMENT, HELIPORTS

ID (25) ELECTROLUMINESCENT PANEL

DL (33) 12

AN (1) AD-A167 977/XAG

FG (2) 010500

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Airport Noise Control Strategies

AU (10) Cline, Patricia A.

RD (11) May 1986

PG (12) 126 Pages

RS (14) FAA-EE-86-02

RC (20) Unclassified report

NO (21) Revision to report dated Jun 83.

DE (23) *AIRCRAFT NOISE, *NOISE REDUCTION

AIRCRAFT, AIRPORTS, CONTROL, DATA BASES, DIRECTORIES, ENVIRONMENTS,

FACILITIES, FILES(RECORDS), NOISE, PILOTS, STRATEGY

AB (27) The Federal Aviation Administration's (FAA) Airport Noise Control Strategies Data File contains a comprehensive listing of airport noise control actions. The information contained in this data file is an updated version of the June 1983 Airport Noise Control Strategies report. Originally, the data were collected from the Environmental Data Bank of March 1979, the National Business Aircraft Association and the Aircraft Operators Council International. Additional data were garnered from the FAA Airport Facility Directory. For this version, the FAA

regional offices reviewed the latest information and made appropriate changes. Thirty-seven categories of noise control actions have been identified and are in use, singly or in combination, by approximately 400 airports.

AN (1) AD-A169 666/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inhalation Toxicology. VII. Times To Incapacitation and Death for Rats Exposed Continuously to Atmospheric Acrolein Vapor.

DN (9) Technical rept. Oct 82-Jul 83

AU (10) Crane, Charles R.

Sanders, Donald C.

Endecott, Boyd R.

Abbott, John K.

RD (11) May 1986

PG (12) 27 Pages

RS (14) DOT/FAA/AM-86/5

RC (20) Unclassified report

NO (21) See also report dated Mar 77, AD-A043 646.

DE (23) *ACROLEINS, *DEATH, *TOXICITY, *INCAPACITATION

AIRCRAFT, AIRCRAFT CABINS, CHAMBERS, COMBUSTION, DOSAGE, EQUATIONS,

HUMANS, INCAPACITATION, INHALATION, LABORATORY ANIMALS, LETHALITY, LOSSES, MAMMALS, PHYSICAL PROPERTIES, RATS, REGRESSION ANALYSIS, SMOKE,

TIME, TOXICOLOGY, CONCENTRATION(CHEMISTRY), EXPOSURE(PHYSIOLOGY)

AB (27) Acrolein, an organic aldehyde (CH₂=CH-CHO), is extremely irritating to the respiratory passages at very low concentrations. It is known to be present in the smoke from certain materials used in aircraft cabin interiors and could contribute, therefore, to an individual's failure to escape from a burning aircraft. In order to assess acrolein's ability to produce physical incapacitation in a mammal, laboratory rats were exposed continuously to measured atmospheric concentrations of acrolein vapor until they expired. The exposure time required to produce lethality was measured, as was the time at which physical incapacitation occurred. Incapacitation was defined operationally as loss of the ability to walk in a motor-driven wheel, which was enclosed in the exposure chamber. Dose-response curves were generated by equating these two endpoints, time-to-incapacitation and time-to-depth, to the atmospheric acrolein concentration via statistically derived

regression equations. Experimental results suggest that the acrolein dose that will produce physical incapacitation could be 10 to 100 times greater than has been predicted in the past. The possible relationship between the effective toxic doses of acrolein for rats, and those required for humans, is discussed.

AN (1) AD-A169 813/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Recurring rept. 1 Jul-31 Dec 85.

RD (11) 30 May 1986

PG (12) 17 Pages

RS (14) DOT/FAA/ACS-85-2(23)

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *SECURITY

FEDERAL LAW, AIR TRANSPORTATION, AIRCRAFT CABINS, AERONAUTICS, REGULATIONS, UNITED STATES GOVERNMENT, CONGRESS, REPORTS, CIVIL AVIATION, FOREIGN, PASSENGERS

AB (27) This report provides details on the effectiveness of security screening of passengers and all property intended to be carried in the aircraft cabin in air transportation or intrastate air transportation. It also provides a statistical summary of aircraft hijackings and alleged violations of Federal Aviation regulations pertaining to security screening. In addition, the report presents a summary of the assessments conducted to determine the effectiveness of the security measures at foreign airports served by U.S. air carriers and certain other foreign airports as required by Section 1115 of the Federal Aviation Act of 1958, as amended. (Author)

AN (1) AD-A173 031/XAG

FG (2) 061000

061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inhalation Toxicology. VIII: Establishing Heat Tolerance Limits for Rats and Mice Subjected to Acute Exposures at Elevated Air Temperatures.

DN (9) Technical rept. Jul 78-Jan 79
AU (10) Crane, Charles R.
Sanders, Donald C.
RD (11) May 1986
PG (12) 12 Pages
RS (14) DOT/FAA/AM-86/8
RC (20) Unclassified report
DE (23) *TOXICOLOGY, *SMOKE, *HEAT STRESS(PHYSIOLOGY)
COMBUSTION PRODUCTS, COOLING, ATMOSPHERIC TEMPERATURE,
EXPOSURE(PHYSIOLOGY), HYPERTHERMIA, COLLAPSE, TIME, TOXICITY, RATS,
MICE, AIRCRAFT FIRES, AVIATION SAFETY
ID (25) LPN-FAA-AM-A-78-TOX-36, LPN-FAA-AM-B-79-TOX-39
AB (27) Experimental animal subjects are used most commonly to assess the toxicity of thermal decomposition products (smoke) from burning materials. Nascent smoke is obviously quite hot; therefore, the design of smoke toxicity assay systems must provide for adequate cooling of the gases prior to exposure of the animals. This research has addressed the question of how much cooling is required. Rats and mice were exposed to elevated air temperatures over the range of 38C to 110C. The exposure duration required to produce hyperthermic collapse (physical incapacitation) was measured for each temperature. A graph of time-to-collapse as function of exposure temperature was constructed for each species and statistically derived equations were fit to each data set. Times-to-collapse ranged, for the rat, from 60 minutes at 40C to less than 4 minutes at 110C. For the mouse, they ranged from approximately 60 minutes at 40C to 2.5 minutes at 90C. The significance of these findings as they relate to smoke toxicity testing is discussed.

AN (1) AD-A192 110/XAG

**FG (2) 010200
010600**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

**TI (6) Aircraft Hijackings and Other Criminal Acts against Civil Aviation
Statistical and Narrative Reports - Updated to January 1, 1986.**

DN (9) Final rept.

RD (11) May 1986

PG (12) 285 Pages

RC (20) Unclassified report

DE (23) *AIRCRAFT HIJACKING, *CIVIL AVIATION
AIRCRAFT, EXPLOSIONS, STATISTICS

ID (25) *Criminal investigations

AB (27) Contents: U.S. Registered Aircraft Hijacking Statistics; Chronology of

Hijackings of U.S. Registered Aircraft and Legal Status of Hijackers;
Legal Status of Hijackers Summarization; U.S. and Foreign Aircraft
Hijackings; U. S. and Foreign Registered Aircraft
Hijackings-Summarization; Explosions Aboard Aircraft; Worldwide
Significant Criminal Acts Involving Civil Aviation-1985.

AN (1) AD-A167 294/XAG

**FG (2) 010309
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

**TI (6) Report to Congress: Alternatives Available to Accelerate Commercial
Aircraft Fleet Modernization.**

RD (11) 11 Apr 1986

PG (12) 49 Pages

RC (20) Unclassified report

DE (23) *COMMERCIAL AIRCRAFT, *MANAGEMENT INFORMATION SYSTEMS,
*MANAGEMENT

PLANNING AND CONTROL, *AIRCRAFT NOISE

ACQUISITION, AIRCRAFT, CONGRESS, ECONOMICS, HEARING, LEGISLATION,
MOTIVATION, REPORTS, AIRCRAFT INDUSTRY, PLANNING PROGRAMMING

BUDGETING

AB (27) This report provides information on various approaches which could be undertaken to accelerate the acquisition of quieter aircraft by operators of the Nation's commercial aircraft fleets. The approaches discussed include both economic incentives and regulatory actions which would encourage or require replacement of noisier Stage 2 aircraft with quieter, more modern Stage 3 airplanes. Actions requiring legislation or rulemaking or both have been considered. This report was prepared following a public hearing held by the Federal Aviation Administration on December 10, 1985. The report takes into account oral and written comments presented at that hearing, as well as written comments which were submitted to the FAA through February 1, 1986.

AN (1) AD-A172 183/XAG

FG (2) 210400

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Antimisting Fuel Research and Development for Commercial Aircraft.

DN (9) Final summary rept.

AU (10) Yaffee, Michael L.

RD (11) Apr 1986

PG (12) 100 Pages

RS (14) DOT/FAA/CT-86/7
RC (20) Unclassified report
DE (23) *ANTIFOGGING AGENTS, *KEROSENE, *AVIATION SAFETY, *JET ENGINE FUELS,
*FUEL ADDITIVES
AIRCRAFT, AIRPORTS, COMMERCIAL AIRCRAFT, CRASHES, FIRES, FUELS, HANDLING, MIST, MOLECULAR WEIGHT, POLYMERS, PROTECTION, SAFETY, AVIATION ACCIDENTS, AIRCRAFT FIRES
AB (27) This report covers the research, development, testing, and evaluation conducted by the Federal Aviation Administration in pursuit of an effective, feasible antimisting agent for kerosene jet fuels that would prevent or reduce the dangers of postcrash, fuel mist fires. For the past eight years, most of this effort was focused on a high molecular weight polymer, FM-9, as a representative agent to prove the antimisting fuel concept. The results of this work indicate that the goal is achievable: Jet fuel can be modified to provide a significant degree of protection against postcrash fires in impact-survivable accidents. Additional development and testing would be required before the fuel is operationally acceptable. It would be necessary to make some modifications in fuel handling procedures and hardware in aircraft and at airports. But there appear to be no technically insurmountable problems. Keywords: Antimisting kerosene; Safety fuels; Aircraft safety. (Author)

AN (1) AD-A173 654/XAG
FG (2) 010500
140200
170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Helicopter MLS (Microwave Landing System) Flight Inspection Project.
DN (9) Final rept.
AU (10) Shollenberger, Scott B.
Billmann, Barry R.
RD (11) Apr 1986
PG (12) 248 Pages
RS (14) DOT/FAA/CT-86/14
RC (20) Unclassified report
DE (23) *MICROWAVE LANDING SYSTEMS, *INSPECTION, *HELIPORTS HELICOPTERS, APPROACH, OPTICAL TRACKING, TEST METHODS, THEODOLITES,
RADIO TELEMETRY, PORTABLE EQUIPMENT
ID (25) Flight Inspection, Collocated Microwave Landing Systems, Radio

Theodolites, RTT(Radio Theodolite Telemetry)
AB (27) This report describes test procedures and results of series of tests designed to identify microwave landing system (MLS) heliport flight inspection procedures. The tests, conducted in November 1985, demonstrated the feasibility of using helicopter to perform some portion of the flight inspection of the MLS at heliports. Significant findings included the fact that radio theodolite techniques could be used for tracking a helicopter not equipped with stability augmentation equipment. Constituent parts of portable flight inspection package were also identified and tested.

AN (1) AD-A167 049/XAG
FG (2) 040200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM ENGINEERING AND MAINTENANCE SERVICE
TI (6) Very Short Range Statistical Forecasting of Automated Weather Observations.
DN (9) Interim rept. Oct 84-Sep 85
AU (10) Miller, Robert G.
RD (11) Mar 1986
PG (12) 97 Pages
RS (14) DOT/FAA/PM-86/10
CT (15) DTFA01-83-Y-20625
RC (20) Unclassified report
DE (23) *WEATHER FORCASTING
AIRCRAFT, AUTOMATION, CLIMATOLOGY, FORECASTING, GUIDANCE, LINEAR REGRESSION ANALYSIS, METEOROLOGICAL DATA, MULTIVARIATE ANALYSIS, OBSERVATION, OPERATORS(PERSONNEL), PREDICTIONS, SHORT RANGE(TIME),
STATISTICAL ANALYSIS, STATISTICS, SURFACES, WEATHER, MATHEMATICAL PREDICTION, MATHEMATICAL MODELS, MARKOV PROCESSES
ID (25) *Statistical forecasting, GEM(Generalized Equivalent Markov), Generalized equivalent Markov models
AB (27) A procedure is developed for providing weather forecasting guidance over the short period of 10, 20, 30, ... 60 minutes. It uses automated surface observation elements as predictors and predictands. The model is founded on Markov assumption and uses multivariate linear regression as the statistical operator. Details are given on how the Generalized Equivalent Markov (GEM) model is constructed and how it compares with other objective methods such as climatology and persistence. Tests are performed on an independent data sample. Overall, GEM succeeds in bettering persistence and does so uniformly over the 6 projection

periods of 10,20,30,....60 minutes. Keywords: Helicopters, Aircraft safety, Short-range forecasts; Statistical forecasts; Multivariate linear regression.

AN (1) AD-A167 446/XAG

**FG (2) 010301
200100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Analysis of Helicopter Noise Data Using International Helicopter Noise Certification Procedures

AU (10) Newman, J. S.

Rickley, Edward J.
Levanduski, Dennis A.
Woolridge, Susan B.

RD (11) Mar 1986

PG (12) 278 Pages

RS (14) FAA-EE-86-01

RC (20) Unclassified report

DE (23) *AIRCRAFT NOISE, *HELICOPTERS

DATA ACQUISITION, ENVIRONMENTAL IMPACT, HELIPORTS, LEVEL(QUANTITY), LIMITATIONS, NOISE, PANEL(COMMITTEE), TEST METHODS, ROTOR BLADES(ROTARY

WINGS), NOISE REDUCTION, TAKEOFF, WEIGHT, CIVIL AVIATION

ID (25) CH-47D aircraft, S-76 aircraft, H-47 aircraft

AB (27) This report documents the results of a Federal Aviation Administration (FAA) noise measurement flight test program involving seven helicopters and establishes noise levels using the basic testing, reduction and analysis procedures specified by the International Civil Aviation Organization (ICAO) for helicopter noise certification supplemented with some procedural refinements contained in ICAO Working Group II recommendations for incorporation into the standard. The helicopters analyzed in this report include the Hughes 500 D/E, the Aerospatiale AS 350D (AStar), the Aerospatiale AS 355F (TwinStar), the Aerospatiale SA 365 (Dauphin), the Bell 222 Twin Jet, the Boeing Vertol 234/CH 47-D, and the Sikorsky S-76. The document discusses the evolution of international helicopter noise certification procedures and describes in detail the data acquisition, reduction and adjustment procedures. Noise levels are plotted versus the logarithm of maximum gross takeoff weight and are shown relative to the ICAO noise level limits. Data from the ICAO Committee on Aircraft Noise (CAN) Seventh meeting 'request for data' are also presented. Reference testing and operational data are

provided for each helicopter. Keywords: Heliport environmental impact, Certification standards.

AN (1) AD-A167 867/XAG

FG (2) 201400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Loran C 1984 Spring-Summer Stability.

DN (9) Technical note

AU (10) Lorge, Frank

RD (11) Mar 1986

PG (12) 81 Pages

RS (14) DOT/FAA/CT-TN86/10

RC (20) Unclassified report

DE (23) *LORAN, *GROUND WAVES(ELECTROMAGNETIC)

SEASONAL VARIATIONS, POSITION FINDING, SIGNAL TO NOISE RATIO, RECEIVERS, LOW ALTITUDE, ARRIVAL, SPRING SEASON, REFRACTIVE INDEX, SUMMER, SEASONS, ELECTRICAL CONDUCTIVITY, FLIGHT TESTING, MICROCOMPUTERS, STABILITY

ID (25) TD(Time Difference), PDP-11/24 computers, Atmospheric refraction

AB (27) The report describes a flight test designed to examine Loran C seasonal stability. Flights were conducted in the spring and summer of 1984.

Plot data re presented which show seasonal shifts in signal-to-noise ratio, envelope-to-cycle discrepancy, and time differences across the continental United States. A later report will compare these data to new data collected in the winter season.

AN (1) AD-A168 240/XAG

**FG (2) 050800
061000**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Complex Monitoring Performance and the Coronary-Prone Type A Behavior Pattern.

DN (9) Final rept.

**AU (10) Thackray, Richard I.
Touchstone, R. M.**

RD (11) Mar 1986

PG (12) 15 Pages

RS (14) DOT/FAA/AM-86/4

RC (20) Unclassified report

DE (23) *MONITORING, *PERFORMANCE(HUMAN), *VIGILANCE, *ATTENTION
ALPHANUMERIC DATA, BEHAVIOR, BLOOD PRESSURE, DISPLAY SYSTEMS,
HEART
RATE, JOBS, PASSIVE SYSTEMS, PATTERNS, PREDICTIONS, RADAR
EQUIPMENT,
REQUIREMENTS, RESPONSE, SIMULATION, TARGETS, AIR TRAFFIC CONTROL
SYSTEMS, STRESS(PHYSIOLOGY), STRESS(PSYCHOLOGY)

AB (27) The present study examined the possible relationship of the coronary-prone Type A behavior pattern to performance of a complex monitoring task. The task was designed to functionally simulate the general task characteristics of future, highly automated air traffic control systems in which passive monitoring is expected to be a principal job requirement. Thirty-six male subjects, half classified as Type A and half as Type B, monitored the simulated radar display over a 2-hour session for infrequent critical changes in alphanumeric targets. In addition to performance, physiological changes and subjective reactions were also assessed. Type A individuals were found not to differ from Type B individuals in either task performance or in subjective reaction to the task. Task-related changes in heart rate, blood pressure, and general restlessness failed also to provide any evidence of greater arousal in Type A's than in Type B's. The findings are discussed relative to other studies of Type A behavior and performance and to the specific problem of finding useful predictors of performance in operational monitoring situations. Keywords: Attention; Automation; Monitoring; and Vigilance.

AN (1) AD-A168 250/XAG

FG (2) 061100
210200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Inhalation Toxicology. VI. Evaluation of the Relative Toxicity of
Thermal Decomposition Products from Nine Aircraft Panel Materials.

DN (9) Final rept.

AU (10) Crane, Charles R.
Sanders, Donald C.
Endecott, Boyd R.
Abbott, John K.

RD (11) Feb 1986

PG (12) 17 Pages

RS (14) DOT/FAA/AM-86/3

RC (20) Unclassified report

NO (21) See also Part V, AD-A165 034.

DE (23) *GASES, *TOXICITY, *COMBUSTION PRODUCTS
AIRCRAFT CABINS, AIRCRAFT PANELS, ASSEMBLY, COMBUSTION,
CONSTRUCTION,
EXPOSURE(GENERAL), FIBERGLASS, FLAMMABILITY, FLUX DENSITY,
GRAPHITE,
HEAD(ANATOMY), HEAT FLUX, HOMOGENEITY, HONEYCOMB STRUCTURES,
INHALATION, LABORATORIES, MATERIALS, PANELS, POLYCARBONATES,
PRODUCTION, PYROLYSIS, RADIATION, RATS, SHEETS, SMOKE, SURFACES,
THERMOPLASTIC RESINS, TOXICOLOGY, TUBES, EPOXY RESINS, PHENOLIC
PLASTICS, ACRYLONITRILE POLYMERS, POLYBUTADIENE, POLYAMIDE
PLASTICS,
POLYSTYRENE, POLYVINYL CHLORIDE, POLYETHERS, POLYIMIDE PLASTICS

AB (27) The purpose of this study was to determine the relative toxicity of the combustion products from a nine aircraft cabin panels, representing both composite and homogeneous construction, that were being tested concurrently for flammability and smoke production at the FAA Technical Center. We designed and constructed a combustion/exposure assembly in which panel sections were pyrolyzed by radiant head directed on the upper surface only; the relative toxicity of the evolved gases was measured by determination the defect (time-to-incapacitation) on the laboratory rat. We also determine the relative toxicity of gases from the same nine panels when pyrolyzed in the older (and smaller) combustion tube assembly in order to compare the effects of the different pyrolysis modes. Keywords: Time-to death; Heat flux level; Epoxy/Fiberglass Honeycomb; Phenolic/Fiberglass Honeycomb; Epoxy/Kevlar-Honeycomb; Phenolic/Kevlar Honeycomb; Phenolic/Graphite Honeycomb; Polyether-ether-ketone/Polyimide/Fiberglass Honeycomb; Acrylonitrile-butadiene-styrene/Polyvinylchloride; Polycarbonate Thermoplastic Sheet; and Polyetherimide Thermoplastic Sheet.

AN (1) AD-A169 127/XAG

FG (2) 010500
050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS

TI (6) A Benefit-Cost Analysis of the Airport Improvement Program (AIP),
Fiscal Years 1982 through 1985.

DN (9) Final rept.

AU (10) Rodgers, John M.
Hoffer, Stefan
Keech, Ward L.

Smith, Thomas C.

RD (11) Feb 1986

PG (12) 98 Pages

RS (14) FAA-APO-86-3

RC (20) Unclassified report

DE (23) *AIRPORTS, *BENEFITS, *COST ANALYSIS

CAPACITY(QUANTITY), COST EFFECTIVENESS, COSTS, ECONOMICS,

ENVIRONMENTAL

PROTECTION, IMPACT, INVESTMENTS, LIFE CYCLES, MAINTENANCE,

OPERATION,

PLANNING, PRESERVATION, RATIOS, SAFETY, TEST AND EVALUATION

AB (27) This report assesses the major benefits and costs of airside capital and planning investments in the U.S. public airport system. The assessment centers on the Airport Improvement Program (AIP), the current federal airport grant program, but the findings and conclusions are also applicable to airport projects funded by other sources -- e.g., non-AIP state and local funding. An estimate is made of the major airside life-cycle benefits that have accrued and that are expected to accrue from capital and planning investments made under the AIP from FY 1982 through FY1985 inclusively and their attendant life-cycle operations and maintenance costs. Because not all types of benefits are quantified, the study should be considered conservative in that it probably understates total investment impact. Benefits consist of improved airport safety, preservation of airport capacity, environmental protection and economic development. Costs consists of capital and planning investments and the attendant life-cycle operations and maintenance costs. The life-cycle benefits quantified total \$25.28 billion (1985 dollars at 1985 discounted present value). Comparing this with the corresponding life-cycle costs of \$6.32 billion yields a benefit/cost ratio of 4.00 to 1.

AN (1) AD-A172 260/XAG

FG (2) 010600

120500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Comprehensive Test and Evaluation of the Dalmo Victor TCAS (Traffic Alert and Collision Avoidance System) II Industry Prototype.

DN (9) Final rept.

AU (10) Rehman, Abert J.

RD (11) Feb 1986

PG (12) 248 Pages

RS (14) DOT/FAA/CT-86/2

RN (18) DOT/FAA/PM-86/2

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *COLLISION AVOIDANCE, *PROTOTYPES, *AIR TRAFFIC CONTROL SYSTEMS

ACCEPTABILITY, AERONAUTICS, AIRWORTHINESS, COCKPITS, COMMERCIAL

AVIATION, COMMUNITIES, COMPUTER PROGRAM VERIFICATION, DISPLAY

SYSTEMS,

INDUSTRIES, INFLIGHT, OBSERVERS, PILOTS, RELIABILITY, TEST METHODS,

VALUE, TRAINING, ACCEPTANCE TESTS

ID (25) TCAS(Traffic Alert and Collision Avoidance System)

AB (27) This document describes the test conduct and results of a five-part comprehensive evaluation of two prototype minimum Traffic Alert and Collision Avoidance System (TCAS) II units. The five parts include: (1) hardware and software verification, (2) cockpit display and operational procedure verification, (3) pilot and inflight observer training, (4) TCAS II demonstration to the aviation community, and (5) readiness for airworthiness certification testing. Overall, the minimum TCAS II prototype has matured into an acceptable test-bed for the 8-month inservice evaluation in a commercial airliner. System reliability has improved and pilot acceptance was generally good. It is expected that minimum TCAS II will provide a valuable service to airline pilots.

23

AN (1) AD-A164 907/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Math Model Study of a Proposed Glide Slope for Runway 13R, Dallas-Fort Worth Airport, Texas.

DN (9) Technical note

AU (10) Walls, John

RD (11) Jan 1986

PG (12) 19 Pages

RS (14) DOT/FAA/CT-TN85/80

RC (20) Unclassified report

DE (23) *GLIDE SLOPE, *MATHEMATICAL MODELS

NULLS(AMPLITUDE), SIDEBANDS, TEXAS, INSTRUMENT LANDINGS, LANDING

AIDS,

PATHS, SYMMETRY, TOLERANCE, RUNWAYS

ID (25) ILS

AB (27) This document describes instrument landing system (ILS) math modeling performed at the request of the Southwest Region. Data are presented showing the computed performance of a proposed glide slope for runway

13R at the Dallas-Fort Worth Airport, Texas. Model path structure and level run plots are provided for capture effect, null reference, and sideband reference systems installed at a location selected by region engineers. Results indicate that all three system should meet category II path structure, linearity, and symmetry tolerances. The capture effect system provides the smoothest glidepath structure of the three systems modeled. (Author)

AN (1) AD-A168 742/XAG

FG (2) 060400

061000

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Biological Rhythms and Rotating Shift Work. Some Considerations for Air Traffic Controllers and Managers.

DN (9) Final rept.

AU (10) Melton,Carlton E.

Bartanowicz,Robert S.

RD (11) Jan 1986

PG (12) 12 Pages

RS (14) DOT/FAA/AM-86/2

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *BIOLOGICAL RHYTHMS, *CIRCADIAN RHYTHMS, *JOB

SHOP SCHEDULING

TIME

AB (27) This report is a general review of some of the current themes and practices regarding rotating shift work; to inform air traffic controllers, technicians, and managers of these issues; and to offer some ideas that may be helpful in dealing with difficulties in this area. There is no pat or easy single solutions to the problems of every employee. Managers are always faced with difficult decisions, and shift work is one of the most difficult because it can become an emotionally charged issue. Keyword: Shift work; Circadian rhythms; Biological time clocks; Rotation; Performance(Human); Fatigue.

AN (1) AD-A182 747/XAG

FG (2) 050100

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR

FOR AIRPORTS

TI (6) Report of Accomplishments Under the Airport Improvement Program.

DN (9) Rept. no. 5 (Annual) for period ending 30 Sep 86

AU (10) Hetsko,Jean

RD (11) 1986

PG (12) 124 Pages

RS (14) FAA-ARP-87-4

RC (20) Unclassified report

DE (23) *PLANNING PROGRAMMING BUDGETING, *AIRPORTS, *GRANTS TRANSPORTATION, FEDERAL BUDGETS

AB (27) Section 521 of the Airport and Airway Improvement Act of 1982 (Public Law 970248) requires that the Secretary of Transportation submit an annual report to Congress describing the accomplishments of the airport grant program. This report covers activities for the fiscal year ending September 30, 1986. It covers airports grant-in-aid programs.

AN (1) AD-A190 290/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) FAA (Federal Aviation Administration) Statistical Handbook of Aviation.

DN (9) Annual rept. for CY86.

RD (11) 1986

PG (12) 220 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION

AIR TRANSPORTATION, AIRCRAFT, AIRPORTS, AVIATION ACCIDENTS, EXPORTS,

HANDBOOKS, IMPORTS, PRODUCTION, STATISTICAL DATA, FLIGHT CREWS, INDUSTRIAL PRODUCTION

AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity of Certified Air Route Carriers, U.S. Civil Air Carrier Fleet, U. S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production and Imports/Exports, and a Glossary of the terms used in this publication. Keywords: Statistical data, Tables(Data).

AN (1) AD-A193 020/XAG

FG (2) 050500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Criminal Acts against Civil Aviation, 1986.

RD (11) 1986

PG (12) 47 Pages

RC (20) Unclassified report

DE (23) *AIRCRAFT HIJACKING, *CIVIL AVIATION, *CRIMES

AIR, AIRCRAFT, AIRPORTS, COMMERCE, CONTROL, EXERCISE(PHYSIOLOGY), EXPLOSIONS, MEDIA, SECURITY, SOURCES, THREATS, UNITED STATES, INTERNATIONAL

AB (27) The Federal Aviation Administration's Office of Civil Aviation Security

maintains a record of aircraft hijackings and other significant criminal acts against civil aviation worldwide. These records include actual and attempted hijackings, explosions aboard aircraft, at airports, and at airline offices, and other selected criminal acts against civil aviation. These offenses represent the most serious threats to the safety of civil aviation and carry with them the greatest potential danger to the commercial air traveler. Hijacking incidents are viewed within the context of the Federal criminal statute (40 USC 1472(b)) which defines air piracy as any seizure or exercise of control, by force or violence or threat of force or violence, or by any other form of intimidation, and with wrongful intent, of any aircraft. There is no attempt made in this report to differentiate between an act of air piracy and an attempted act of air piracy. The information contained in this publication is derived from a variety of government and media sources; however, in many cases specific details of a particular incident may not be available, especially those occurring outside the continental United States. While the Federal Aviation Administration makes every effort to provide complete and accurate information, it is not always possible to verify accounts of some events used in this publication. This publication is intended to summarize the significant criminal acts against civil aviation during 1986 and to place the events in perspective within a ten year timeframe.

AN (1) AD-A163 232/XAG

FG (2) 010400

120500

120600

130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND

ENERGY

TI (6) A Microcomputer Pollution Model for Civilian Airports and Air Force Bases.

DN (9) User's guide

AU (10) Segal, H. M.

Kemp, J. K.

Hamilton, P. L.

RD (11) Dec 1985

PG (12) 55 Pages

RS (14) FAA-EE-85-4

RN (18) AFESC/ESL-TR-85-41

RC (20) Unclassified report

DE (23) *AIRPORTS, *MICROCOMPUTERS, *MODELS, *POLLUTION

AIR FORCE, AIR FORCE FACILITIES, AIR QUALITY, CIVIL AVIATION, COMPUTER PROGRAMS, EMISSION, FLOW, FLOW CHARTING, INVENTORY, MENU, MILITARY FORCES(UNITED STATES), SOURCES, TEST AND EVALUATION, USER

MANUALS, FLOW

CHARTING

AB (27) Over the past five years, the Federal Aviation Administration and the United States Air Force have developed a number of user-friendly emissions and dispersion models for air quality assessment purposes. The first, Simplex A was completed in July 1981. The second, called Emissions and Dispersion Modeling System (EDMS), has just been completed and this report constitutes its User's Guide. First, this User's Guide shows how the EDMS system evolved from the earlier, more complex AVAP and AQAM systems. Then, it identifies the hardware and software required to run the system and provides instructions on how to add, delete or change standard information. Finally, through a 125-step example problem, it instructs the user on how to input and process data to produce: (1) an emissions inventory of all sources at an airport/airbase, and (2) an estimate of the concentrations of these sources at specified locations. An inexperienced user should be able to process the example problem in less than three hours. Keywords: Menu flow; and Flow charting. (Author)

AN (1) AD-A165 073/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Technical Support of the Wall Street/Battery Park City Heliport MLS (microwave Landing System) Project.

DN (9) Technical note Jan-Jun 85

AU (10) Billmann, Barry R.
Enias, James H.
Webb, Michael
RD (11) Dec 1985
PG (12) 78 Pages
RS (14) DOT/FAA/CT-TN85/58
RC (20) Unclassified report
DE (23) *HELIPORTS, *MICROWAVE LANDING SYSTEMS
ACCEPTABILITY, AIRBORNE, BENEFITS, HELICOPTERS, INDUSTRIES, URBAN
AREAS, USER NEEDS, VISUAL FLIGHT RULES, WINTER, WORKLOAD, NEW YORK
CITY(NEW YORK), DEMONSTRATIONS, INSTRUMENT FLIGHT, TERMINAL FLIGHT
FACILITIES
AB (27) During the winter and spring of 1985, the Federal Aviation
Administration (FAA) Eastern Region in conjunction with the Guidance
and Airborne Systems Branch at the FAA Technical Center conducted a
demonstration of a Microwave Landing System (MLS) located at a downtown
heliport. This report describes both the industry/user and FAA
Technical Center activities during the evaluation period. It describes
the evaluation methodology and addresses topics concerning both
technical and operational issues. It also describes the helicopter
procedures flown during this evaluation and provides an analysis of
signal coverage and the user's subjective opinions concerning the
acceptability and perceived workload associated with these procedures.
It was concluded that MLS to heliports is a viable asset to the
helicopter Instrument Flight Rules (IFR) community, however, its full
benefits may not be realized in the Battery Park/Wall Street area
without revisiting the necessity and demand for the New York Terminal
Control Area (TCA) Visual Flight Rules (VFR) operating exclusion area.
(Author)

AN (1) AD-A168 784/XAG
FG (2) 010600
131200
210400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM
ENGINEERING AND
MAINTENANCE SERVICE
TI (6) Proceedings of Fuel Safety Workshop Held at Alexandria, Virginia on 29
October-1 November 1985.
RD (11) 31 Dec 1985
PG (12) 385 Pages
RS (14) DOT/FAA/PM-86/13
RC (20) Unclassified report

DE (23) *AVIATION FUELS, *AVIATION SAFETY, *FIRE SAFETY
AERONAUTICS, AIR FORCE FACILITIES, AIRCRAFT FIRES, COMMERCIAL
AVIATION,
CONTROL, CRASHES, DEMONSTRATIONS, FUELS, IMPACT, INDUSTRIAL
RESEARCH,
OPERATION, ORGANIZATIONS, SAFETY, UNITED STATES GOVERNMENT,
WORKSHOPS,
FIRE PREVENTION
AB (27) The approximately 150 participants attending the Fuel Safety Workshop
sponsored by the Federal Aviation Administration, all made valuable
contributions to the successful exchange of information. The four-day
workshop, held October 29 through November 1, 1985, provided
representatives from airline operations and management, manufacturers,
suppliers, governments and private sector organizations a forum to
constructively review the state-of-the-art in fuel safety research. The
workshop served a four-fold purpose: 1) To discuss the results from the
FAA/National Aeronautics and Space Administration (NASA) Controlled
Impact Demonstration (CID) conducted last December at Edwards Air Force
Base, California; 2) To explore potential approaches to preventing
post-crash aircraft fuel fires, including possible combinations of
various approaches; 3) To re-evaluate past approaches in terms of
current technology; and 4) to propose a course of action for future
industry/government research, especially any future FAA Research and
Development program. These Proceedings contain in the formal Conference
presentations followed by the recommendations of the attendees as
agreed upon in the three informal working breakout sessions. (Author)

AN (1) AD-A171 840/XAG
FG (2) 010500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS
TI (6) Airport Activity Statistics of Certificated Route Air Carriers.
DN (9) Rept. for period ending 31 Dec 85.
RD (11) 31 Dec 1985
PG (12) 366 Pages
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS
STATISTICAL DATA, AIR SPACE, PASSENGERS, TAKEOFF, ROUTING,
SCHEDULING,
AIR TRANSPORTATION, AIRCRAFT, CARGO, INTERNATIONAL AIRPORTS
ID (25) Mail, Express, Air carriers

AB (27) This report furnishes airport activity of the large Certificated Route Air Carriers. Included in the data contained in Table 6 are passenger enplanements, tons of enplaned freight, express, and mail. Both scheduled and non-scheduled service, and domestic and international operations are included. These data are shown by airport and carrier. Table 7 includes departures by airport, carrier and type of operation, and type of aircraft.

AN (1) AD-A173 757/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft, Calendar Year 1985.

DN (9) Annual rept.

RD (11) 31 Dec 1985

PG (12) 348 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *COMMERCIAL AIRCRAFT

AIRCRAFT CARRIERS, AIR TRAFFIC CONTROL TERMINAL AREAS, STATISTICAL DATA, CENSUS, TRANSPORT AIRCRAFT, AIRCRAFT INDUSTRY, PASSENGER AIRCRAFT

AB (27) This report presents information about the U.S. civil aircraft fleet.

It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner.

AN (1) AD-A162 825/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Recurring rept. 1 Jan-30 Jun 85.

RD (11) 07 Nov 1985

PG (12) 19 Pages

RS (14) DOT/FAA/ACS-85-1

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *SECURITY

REPORTS, PASSENGERS, TERMINAL FLIGHT FACILITIES, AIRCRAFT CABINS, AERONAUTICS, REGULATIONS, UNITED STATES GOVERNMENT, OPERATIONAL

EFFECTIVENESS

ID (25) *Civil aviation security, Security screening

AB (27) This report provides details on the effectiveness of security screening of passengers and all property intended to be carried in the aircraft cabin in air transportation or intrastate air transportation. It also provides a statistical summary of aircraft hijackings and alleged violations of Federal Aviation regulations pertaining to security screening. This 22nd Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program is submitted in accordance with section 315(a) of the Federal Aviation Act. It presents a concise picture of the nationwide effectiveness of the procedures used to screen passengers and their carry-on items prior to boarding scheduled and public charter flights as well as visitors desiring access to sterile air terminal passenger boarding areas.

AN (1) AD-A165 034/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inhalation Toxicology. V. Evaluation of Relative Toxicity to Rats of Thermal Decomposition Products from Two Aircraft Seat Fire-Blocking Materials.

DN (9) Rept.for Oct 83-Sep 84

AU (10) Sanders,Donald C.

Crane,Charles R.

Endecott,Boyd R.

RD (11) Nov 1985

PG (12) 16 Pages

RS (14) DOT-FAA-AM-86-1

RC (20) Unclassified report

NO (21) See also report dated May 85, AD-A157 400.

DE (23) *TOXICITY, *COMBUSTION PRODUCTS

ALBINISM, ALUMINUM, CARBON MONOXIDE, CYANIDES, ENVIRONMENTS, FABRICS,

FLUX DENSITY, FOAM, FURNACES, HAZARDS, HEAT, HIGH TEMPERATURE, HYDROGEN

CYANIDE, NEOPRENE, POLYURETHANE RESINS, PRODUCTION, PYROLYSIS,

RADIANT

FLUX DENSITY, RADIATION, RATS, SMOKE, SYNTHETIC MATERIALS,

TOXICOLOGY,

AIRCRAFT FIRES, AIRCRAFT SEATS, INHALATION

AB (27) Two fire-blocking layer (FBL) materials, designed to delay the thermal

decomposition of polyurethane foam seat cushions during an aircraft cabin fire, were evaluated for the relative toxicity of their gaseous combustion products. Each materials was thermally decomposed under five distinct thermal environments: two contact temperatures (600 and 750 c) in a horizontal hot tube furnace and three flux levels (2.5, 5.0, and 7.5 w/cm) in a radiant heat furnace. The measured toxicological endpoint was time-to-incapacitation (+ sub i) in the albino rat; this endpoint is believed to be the most relevant one for assessing smoke hazard in a fire environment. In three of the five test environments, norfab, an aluminized synthetic fabric, produced shorter + sub i--and was thus toxic--than vonar, a neoprene foam. however, at 2.5 w/cm in the radiant furnace system, the norfab test specimen lost only 13 percent of the sample weight and did not incapacitate any of the test animals during the exposure period and, at 750c (flaming) in the combustion tube assembly, norfab produced longer and more variable + sub i than did vonar. Hydrogen cyanide (hcn) was detected in the combustion products from norfab under all test conditions except the 2.4 w/cm radiant flux level; no HCN was detected in the test conditions except the 2.5 w/+ sub i radiant flux level; no HCN was detected in the combustion products from any of the vonar tests. Since norfab routinely produced lower concentrations of carbon monoxide than did vonar under all test conditions, the greater apparent toxicity (shorter + sub i) of norfab would appear to be caused by the cyanide production.

AN (1) AD-B169 889/XAG
FG (2) 170703
010300
CA (5) FEDERAL AVIATION ADMINISTRATION TECH- NICAL CENTER ATLANTIC CITY NJ
TI (6) Validation of MLS Siting Criteria for MLS Steep Angle Approaches to a Heliport.
DN (9) Technical note
AU (10) Shollenberger, Scott B.
RD (11) Nov 1985
PG (12) 62 Pages
RS (14) DOT/FAA/CT-TN85/53
RN (18) XH-DOT/FAA/PM
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *HELIPORTS, *MICROWAVE LANDING SYSTEMS
ANGLES, APPROACH, DECELERATION, FLIGHT, HELICOPTERS, HELIPADS, IMAGE

MOTION COMPENSATION, MANAGEMENT, PILOTS, PRECISION, SEPARATION, TEST
AND EVALUATION, TIME, VELOCITY, METEOROLOGICAL INSTRUMENTS
DL (33) 12

AN (1) AD-A162 473/XAG
FG (2) 010300
230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Evaluation of a Passenger Mask Modified with a Rebreather Bag for Protection from Smoke and Fumes

AU (10) Higgins,E. A.
Saldivar,J. T.
Lyne,P. J.
Funkhouser,G. E.

RD (11) Oct 1985

PG (12) 25 Pages

RS (14) DOT/FAA-AM-85-10

RC (20) Unclassified report

DE (23) *COMMERCIAL AVIATION, *PASSENGERS, *AIRCRAFT FIRES, *BREATHING MASKS

ALTITUDE CHAMBERS, BALANCE, BREATHING APPARATUS, CARBON DIOXIDE, CONCENTRATION(COMPOSITION), GROUND LEVEL, INFLIGHT, OPENINGS,

PARTIAL

PRESSURE, PROTECTIVE EQUIPMENT, RESISTANCE, SMOKE, VALVES, OXYGEN MASKS

ID (25) Rebreather bag

AB (27) A series of experiments were conducted in an altitude chamber at ground level, 8,000 ft, 14,000 ft, and 21,500 ft, both with and without exercise, to evaluate the potential for providing protection from smoke and fumes for airline passengers while wearing a standard continuous-flow passenger mask modified by the addition of a rebreather bag. It was determined that it would provide increased protection for those individuals who had tidal volumes of 1.5 L or less. However, it would not function properly for those individuals who had tidal volumes greater than 1.5 L. Either the carbon dioxide levels were too great (above 15 mm Hg partial pressure) or the rebreather bag collapsed. These results indicate that the addition of the rebreather bag to the passenger mask has the potential for providing protection from smoke and fumes, but the system must have appropriately balanced valve resistances and appropriately sized valve openings. This critical

balance has not yet been achieved for those individuals with large tidal volumes. Keywords: Passenger masks; In-flight aircraft fires; Protective breathing equipment.

AN (1) AD-A163 076/XAG

FG (2) 010600

050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Alcohol Rehabilitation of Airline Pilots

AU (10) Russell, Julia C.

Davis, Audie W.

RD (11) Oct 1985

PG (12) 15 Pages

RS (14) DOT/FAA/AM-85/12

RC (20) Unclassified report

DE (23) *PILOTS, *ALCOHOLISM, *AVIATION SAFETY

COMMERCIAL AVIATION, DIAGNOSIS(GENERAL), ALCOHOLS, REHABILITATION, FLIGHT, MEDICINE, RECORDS, SURVEYS

AB (27) This study involves a survey of medical records for over 500 airline pilots who have been medically certified by the FAA after a diagnosis of alcoholism. The program demonstrates an 85% rate of success since 1976. If a pilot experiences a relapse, he/she is immediately taken off flight duty and recycled back through the program. In no case where there has been a relapse has it been felt that aviation safety was compromised. The success of this program is due to several unique features, such as the cooperation of the pilots' union, airline companies, and the FAA to identify and treat alcoholic pilots. This program also includes peer identification and referral and an intensive 2-year followup of pilots by all three groups mentioned above.

AN (1) AD-A163 673/XAG

FG (2) 010400

061000

230400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Effect of Visual Taskload on Critical Flicker Frequency (CFF) Change during Performance of a Complex Monitoring Task

AU (10) Thackray, Richard I.

Touchstone, R. M.

RD (11) Oct 1985

PG (12) 22 Pages

RS (14) FAA-AM-85-13

RC (20) Unclassified report

DE (23) *MONITORING, *DISPLAY SYSTEMS, *VISUAL PERCEPTION

AIRCRAFT, ALPHANUMERIC DATA, DATA STORAGE SYSTEMS, FLICKER, FLIGHT PATHS, FREQUENCY, JOBS, PASSIVE SYSTEMS, REQUIREMENTS, TARGETS,

AIR

TRAFFIC CONTROL SYSTEMS, FLIGHT CONTROL SYSTEMS, AIR TRAFFIC CONTROLLERS, HUMAN FACTORS ENGINEERING, VISUAL TARGETS, FATIGUE(PHYSIOLOGY)

ID (25) CFF(Critical Flicker Frequency)

AB (27) The present study examined the effect of differing levels of visual taskload on critical flicker frequency (CFF) change during performance of a complex monitoring task. The task employed was designed to functionally simulate the general task characteristics of future, highly automated air traffic control systems in which passive monitoring is likely to be a principal job requirement. Forty subjects, divided into two equal-size groups, monitored displays containing either 8 or 16 alphanumeric targets. Nine critical events were randomly presented during each half-hour of the single 2-h session to which each subject was exposed. CFF thresholds were obtained prior to and following the sessions. Subjects monitored for the occurrence of two types of critical events. The first type consisted of a readily detectable change in an alphanumeric data block; the second kind of event was the occurrence of two aircraft (alphanumeric targets) at the same altitude on the same flight path. The results revealed that the more readily detectable critical events showed no evidence of performance decrement at either level of visual taskload. For the more difficult task of detecting critical altitude events, both CFF and performance showed evidences of fatigue that were confined entirely to the higher taskload condition. The findings are discussed with reference to fatigue and monitoring loads in highly automated air traffic control system concepts.

AN (1) AD-A163 722/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Computed Centerline MLS (Microwave Landing System) Approach Demonstration at Washington National Airport.

DN (9) Technical note
AU (10) Remer, James H.
RD (11) Oct 1985
PG (12) 42 Pages
RS (14) DOT/FAA/CT-TN85/63
RC (20) Unclassified report
DE (23) *MICROWAVE LANDING SYSTEMS, *SYSTEMS ENGINEERING
DEMONSTRATIONS, EXPERIMENTAL DATA, FLIGHT, FLIGHT TESTING,
GEOMETRY,
COMPUTER PROGRAMS, PLOTTING, RUNWAYS, SITES, AIRPORTS, APPROACH,
AZIMUTH
AB (27) This report describes the Computed Centerline Microwave Landing System
(MLS) Approach Demonstration Project at the Washington National
Airport. The purpose of this project was to demonstrate the capability
of generating and flying a computed centerline approach for a
nonstandard MLS siting. Specifically, the system which was developed
enables final approaches to be made to runways which have azimuth units
offset from the runway centerline. This system was successfully flight
tested at the Federal Aviation Administration (FAA) Technical Center,
Atlantic City Airport, NJ, and at the Washington National Airport.
Runway 33 was used at Washington, with its MLS azimuth unit situated
275 feet to the right of the centerline. Conclusions derived from this
project indicate that computed centerline approaches are indeed
feasible. Precautions must be taken however, to properly tailor the
course width. Site geometry and minima also impact system performance.
In addition to the flight test data plots, the report contains system
hardware and software design data.

AN (1) AD-A175 596/XAG
FG (2) 200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY
TI (6) 1985 Small Propeller-Driven Aircraft Noise Test Program
DN (9) Preliminary rept.
AU (10) Jones, Kenneth E.
RD (11) Oct 1985
PG (12) 41 Pages
RS (14) DOT/FAA/EE-85-8
RC (20) Unclassified report
DE (23) *AIRCRAFT NOISE, *PROPELLER NOISE, *ACOUSTIC MEASUREMENT
AERIAL PROPELLERS, AERONAUTICS, ARRAYS, AUDIO TONES, BLADES,
DESTRUCTION, FLIGHT TESTING, FREQUENCY, FUNCTIONS, GROUND LEVEL,

HORIZONTAL ORIENTATION, INSTALLATION, INTERFERENCE, INTERNATIONAL,
LOW
FREQUENCIES, MATHEMATICAL PREDICTION, MICROPHONES, PATTERNS,
PLATES,
SPECTRA, SUMMER, TEST AND EVALUATION, TEST METHODS, THEORY,
VERTICAL
ORIENTATION, ACOUSTIC DATA, ACOUSTIC ARRAYS, AUDIO FREQUENCY
AB (27) The international aviation community is currently reviewing noise
certification procedure for small propeller-driven aircraft. Under
discussion is a proposal to substitute a ground-plane microphone for
the currently specified elevated microphone as a means of suppressing
spectral irregularities. Given the strong low and mid-range tonal
frequencies attendant to propeller-driven aircraft, the
constructive/destructive interference pattern in an aircraft frequency
spectrum can result in inconsistent certification test results for
aircraft with different blade passage frequencies. The Federal Aviation
Administration conducted several flight tests during the summer of 1985
in-order-to compare noise levels measured at four feet to ground-plane
levels as a function of the blade passage frequency. The purpose of
this report is to present a preliminary assessment of the data acquired
during the flight tests. A more comprehensive analysis of the test
results will be documented in the final report. Three flight tests were
performed using a Cessna 210, Cessna Caravan I, and a (Beechcraft) U.S.
NAVY T-34C. A vertical array (3.75 to 7.0 ft.) of microphones and a
range of test RPMs were used in-order-to test the theoretical
prediction of the ground reinforcement effect. As a secondary
objective, the microphones were redeployed in horizontal arrays to test
for a difference in variability between elevated and ground-plane
microphones. The primary installation for the ground-plane microphone
was over a 0.4 meter circular metal plate. A comparison was also made
between 0.4 meter and 36 inch diameter ground plates.

AN (1) AD-B169 888/XAG
FG (2) 010301
010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC
CITY NJ
TI (6) Helicopter Terminal Instrument Approach Procedures (VOR/ILS).
DN (9) Technical note
AU (10) Wolf, Christopher J.
RD (11) Oct 1985
PG (12) 350 Pages
RS (14) DOT/FAA/CT-TN85/24

RN (18) XH-DOT/FAA/PM
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *INSTRUMENT LANDINGS
APPROACH, HELICOPTERS, MANAGEMENT, PRECISION, RADIO EQUIPMENT,
RADIO
RANGES, RESPONSE, STANDARDS, TERMINALS, VERY HIGH FREQUENCY,
WEIGHT,
OMNIDIRECTIONAL, GROUND CONTROLLED APPROACH RADAR
ID (25) FAA(Federal Aviation Administration), TERPS(Technical Center's
Helicopter Terminal Instrument Approach Procedures), AVN(Aviation
Standards National Field Office), ILS(Instrument Landing System),
Landing approach
DL (33) 12

AN (1) AD-A159 898/XAG
FG (2) 010600
140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY

TI (6) International Civil Aviation Organization Helicopter Noise Measurement
Repeatability Program: U.S. Test Report, Bell 206L-1, Noise Measurement
Flight Test

AU (10) Newman,J. S.
Rickleby,E. J.
Locke,M.

RD (11) Sep 1985

PG (12) 427 Pages

RS (14) FAA/EE-85-6

RC (20) Unclassified report

DE (23) *AIRCRAFT NOISE, *ACOUSTIC MEASUREMENT
AIRSPEED, APPROACH, ACOUSTICS, HELICOPTERS, SPECTRA, NOISE
REDUCTION,

FLIGHT TESTING, MEASUREMENT, ENVIRONMENTAL IMPACT, INTERNATIONAL
AIRPORTS, LEVEL(QUANTITY), DESCENT, RATES, NOISE(SOUND), ACOUSTIC
DATA,

CIVIL AVIATION, REPRODUCIBILITY, ROTOR BLADES(ROTARY WINGS),
DIRECTIONAL, INFLIGHT, HOVERING, GROUND EFFECT, LEVEL FLIGHT,
TAKEOFF,
TORQUE, TEST METHODS

ID (25) HNMRP(Helicopter Noise Measurement Repeatability Program),
Certification, Blade tips, Bell-206L-1 aircraft

AB (27) This document reports the findings of the U.S test team's participation
in the Helicopter Noise Measurement Repeatability Program (HNMRP). The
U.S./Canadian flight test was held in August of 1984 at Dulles
International Airport near Washington, D.C. The principal objective of
this international HNMRP is to refine noise certification testing
requirements. Participating nations conducted the test programs on the
same type helicopter, the Bell 206L-1 (or the acoustically equivalent
206L-3), using the same test procedures. Analyses in this document
include the investigation of source noise adjustments based on
increases in noise level with advancing blade tip Mach number, the
examination of relative source contributions in the helicopter
acoustical spectrum, and source directivity for both in-flight and
static operations. This report contains helicopter noise definition
information (useful in environmental impact analyses) for level
flyovers at various airspeeds and altitudes, and ICAO takeoff and
approach procedures. Data are also shown for a noise abatement
operation involving dynamic changes in torque, rate of descent and
airspeed. This report also provides information for the hover-in-ground
effect, flight idle and ground idle static operations.

AN (1) AD-A161 286/XAG
FG (2) 200400
210200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) A Vortex Model for Wall Flame Height.

DN (9) Final rept.

AU (10) Eklund,Thor I.

RD (11) Sep 1985

PG (12) 14 Pages

RS (14) DOT/FAA/CT-85/17

RC (20) Unclassified report

DE (23) *FLAMES, *VORTICES, *COMBUSTION

AIR FLOW, ENERGY TRANSFER, FILAMENTS, HEIGHT, LOSSES, MASS, MODELS,
RATES, STOICHIOMETRY, TWO DIMENSIONAL, WALLS

AB (27) A two-dimensional vortex model is developed to describe flames on
burning walls. The flame is considered a region of intense vorticity
generation and is modeled by an equivalent vortex filament. Flame
height is predicted by matching the induced air-flow to stoichiometric
requirements based on wall mass loss rate or energy release rate. The
vortex model predicts the same two-thirds power law relationship that
has been determined from other approaches. The quantitative predicted
height is within the published limits of experimental certainty.

AN (1) AD-A161 637/XAG
FG (2) 131200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Aircraft Interior Panel Test Criteria Derived from Full-Scale Fire Tests.
DN (9) Final rept.
AU (10) Hill, R. G.
Eklund, T. I.
Sarkos, C. P.
RD (11) Sep 1985
PG (12) 65 Pages
RS (14) DOT/FAA/CT-85/23
RC (20) Unclassified report
NO (21) Original contains color plates: All DTIC and NTIS reproductions will be in black and white.
DE (23) *AIRCRAFT PANELS, *AIRCRAFT CABINS, *FIRE SAFETY, *AVIATION SAFETY COMBUSTION, CONSTRUCTION, DOORS, FLAMMABILITY, FUSELAGES, HEAT, HONEYCOMB STRUCTURES, INTERNAL, MATERIALS, OPENING(PROCESS), PANELS, PASSENGERS, RELEASE, SIMULATION, SURVIVABILITY, JET TRANSPORT AIRCRAFT, AIRCRAFT SEATS, CARPETS, LOW RATE, SCENARIOS, PHENOLS, FIBERGLASS, WIDTH
ID (25) C-133 aircraft
AB (27) Full-scale cabin fire tests were conducted to determine potential increases in passenger survivability associated with different interior honeycomb panel constructions. The test fuselage was a C-133 with a simulated wide-body door opening exposed to an 8-foot by 10-foot fuel fire. In the first series, the interior near the door was lined with the honeycomb panels to determine whether earlier studies performed with small-scale enclosures were consistent with the full-scale counterpart. These earlier studies resulted in the selection of the Ohio State University (OSU) Rate of Heat Release Apparatus as the most appropriate type test to evaluate aircraft panels. The first series was followed by tests that included fire-blocked seats and carpeting as well as the panels to determine the type survivability increases that could be attained from low heat release materials. The scenario employed generally resulted with flashover within 2 minutes for panels considered typical in performance. A low heat release phenolic/fiberglass panel demonstrated a flashover delay until about 4 minutes into the test. An incombustible panel prevented flashover

altogether. The performance of the various panels was evaluated to develop recommended flammability criteria for a modified OSU Rate of Heat Release Apparatus.

AN (1) AD-A162 209/XAG
FG (2) 050900
060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE
TI (6) Characteristics of Medically Disqualified Airman Applicants in Calendar Years 1982 and 1983
AU (10) Dark, Shirley J.
RD (11) Sep 1985
PG (12) 23 Pages
RS (14) DOT/FAA-AM-85-9
RC (20) Unclassified report
DE (23) *AVIATION PERSONNEL, *AVIATION MEDICINE AIR FORCE PERSONNEL, AREA DENIAL, CARDIOVASCULAR DISEASES, COMPUTER FILES, EYE, LOW LEVEL, PATHOLOGY, POPULATION, RATES, NEUROLOGY
AB (27) This study presents comprehensive data reflecting pertinent denial rates with respect to the medical and general attributes of those airmen denied medical certification in calendar years 1982 and 1983. The study updates previously reported data with respect to medical certification denials. The denial data were obtained from computer files as of July 1, 1983, for calendar year (CY) 1982 applicants and July 1, 1984, for CY 1983 applicants. The data were summed for the 2 calendar years to provide a larger group for comparison with the December 31, 1982, active airman population, the midpoint population date for the denied applicant group. The annual denial rate based on the airman applicants is 6.2 per 1,000 airmen. By class of certificate applied for, the annual denial rate per 1,000 applicants is 3.3 for first class, 3.8 for second class, and 8.6 for third class. As anticipated, general aviation and new applicants contribute greatly to total denials. The most significant causes for denial (regardless of class applied for) are cardiovascular, the miscellaneous pathology category (endocrinopathies, disqualifying medications, and administrative denials), neuropsychiatric, and at a substantially lower level, eye pathology. The updated data on medically disqualified applicants are consistent with expectations and previous findings, with cardiovascular diseases still the number one cause for denial.

AN (1) AD-A163 224/XAG
FG (2) 230600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Development and Evaluation of a Prototype Life Preserver
AU (10) Rueschoff, B. J.
Higgins, E. A.
Burr, M. J.
Branson, D. M.
RD (11) Sep 1985
PG (12) 66 Pages
RS (14) DOT/FAA/AM-85-11
RC (20) Unclassified report
DE (23) *LIFE PRESERVERS
ACCIDENTS, ADULTS, COOLING, ELECTROCARDIOGRAPHY, FEMALES, HEART RATE,
HEAT, IMMERSION, LOW TEMPERATURE, MALES, POPULATION, PROTECTION, PROTOTYPES, RATES, RESPONSE, SPACE (ROOM), STORAGE, SURVIVAL (GENERAL),
THERMAL PROPERTIES, VESTS, WATER, PROTECTION
ID (25) Thermal protection
AB (27) The purpose of this study was to develop a prototype life preserver that included provisions for: (1) increased thermal protection in the event of accidental immersion in cold water, (2) 35 pounds of buoyancy, (3) a donning time of 15 s for an adult, (4) not weighing more nor requiring more storage space than currently used life preservers, (5) fitting individuals from the 5th percentile of adult females to the 95th percentile of adult males in the U.S. adult population, and (6) self-righting the wearer in 5 s. Evaluations were made to ensure that the prototype life preserver met goals of items (2) through (6). However, the focus of the study was the assessment of thermal response characteristics. To assess the thermal response of subjects wearing the prototype life preserver and a currently used standard personal flotation device, a laboratory study with 10 subjects was conducted. Two subjects, one wearing the prototype and the other a standard vest, were immersed during each experiment in 12.8 C (55 F) water in the Civil Aeromedical Institute survival tank for 2 hours. Rectal temperature, heart rate, and EKG were measured continuously. Eight of ten subjects, while wearing the prototype life preserver, showed a decrease in the rate of cooling when compared to the cooling rate when wearing the standard vest. Keywords: Water survival program; Thermal protection.

AN (1) AD-A166 890/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT
SYSTEMS
TI (6) FAA (Federal Aviation Administration) Air Traffic Activity FY 1985.
DN (9) Statistical rept. 1 Oct 84-30 Sep 85
AU (10) Trembley, Nancy
RD (11) 30 Sep 1985
PG (12) 217 Pages
RC (20) Unclassified report
DE (23) *AIR TRAFFIC, *AIR SPACE, *AIR TRAFFIC CONTROL TERMINAL AREAS APPROACH, CONTRACTS, CONTROL CENTERS, FLIGHT, INTERNATIONAL, STATIONS,
TOWERS
AB (27) This report furnishes terminal and en route air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), International Flight Service Stations (IFSSs), and Approach Control Facilities. New this year, Contract tower data in Chapter VI. (Author).

AN (1) AD-A166 916/XAG
FG (2) 140200
170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Hardware Performance Analysis of the Basic Narrow Microwave Landing System (MLS) at Washington National Airport (DCA) in the Service Test and Evaluation Program (STEP).
DN (9) Final technical note 1 Jan 81-30 Jun 83
AU (10) Plotka, Marvin S.
RD (11) Sep 1985
PG (12) 141 Pages
RS (14) DOT/FAA/CT-TN85/19
RC (20) Unclassified report
DE (23) *MICROWAVE LANDING SYSTEMS, *MAINTENANCE, *REMOTE SYSTEMS, *AIRPORTS
DATA ACQUISITION, DATA PROCESSING, ENGINEERING, ENVIRONMENTS, MONITORING, OPERATION, SIGNALS

AB (27) This is the final technical note for the 'Hardware Performance Analysis of the Basic Narrow Microwave Landing System (MLS) at Washington National Airport (DCA) in the Service Test and Evaluation Program (STEP)' for the period January 1, 1981 through June 30, 1983. The MLS configuration, limits of signal operation, system and subsystem operation, data collection and analysis are described. Equipment and environmental problem areas uncovered during the test and evaluation are discussed in the Results section of this report. Chargeable failures are identified and listed and engineering investigations are discussed. Remote Maintenance Monitoring System (RMMS) data analysis are presented. Conclusions and recommendations are listed. Keywords include: Microwave Landing System (MLS), Service Test and Evaluation Program (STEP), MLS Hardware Performance Analysis, and MLS Basic Narrow System.

AN (1) AD-A169 048/XAG
FG (2) 040100
200300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Proceedings and Minutes of the National Interagency Coordination Group Meeting - Low Altitude Direct Strike Lightning Characterization Program Held in Saint Louis, Missouri on 28-29 January 1985.

DN (9) Final rept. 27-28 March 84

AU (10) Glynn, Michael S.

RD (11) Sep 1985

PG (12) 190 Pages

RS (14) DOT/FAA/CT-85/340/1

RC (20) Unclassified report

DE (23) *LIGHTNING, *AVIATION SAFETY

AERONAUTICS, ELECTROMAGNETIC COMPATIBILITY, STATIC ELECTRICITY, RATES,

LOW ALTITUDE, ATMOSPHERIC ELECTRICITY, HAZARDS, PROTECTION,

SYMPOSIA

ID (25) *Lightning strikes, Rate of rise, Lightning protection, Direct strike lightning

AB (27) This publication is a composite of the minutes, and presentations given at the Sixth National Interagency Coordination Group on Lightning and Static Electricity meeting, held in St. Louis, MO January 28 and 29, 1985. Mr. Dave Albright of the Aviation Systems Command, U. S. Army, St. Louis, MO, was the host. The presentations encompassed both the active and anticipated programs from each agency. Note: Considerable latitude was exercised in the literal transcription of the proceedings

to alleviate extensive delays in the publication of the document.

Keywords: Lightning characterization; Rate-of-rise; Electromagnetic compatibility.

AN (1) AD-A159 811/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Comparison of Postmortem Coronary Atherosclerosis Findings in General Aviation Pilot Fatalities

AU (10) Booze, C. F., Jr.

Staggs, C. M.

RD (11) Aug 1985

PG (12) 12 Pages

RS (14) DOT/FAA-AM-85-6

RC (20) Unclassified report

DE (23) *ATHEROSCLEROSIS

AUTOPSY, AVIATION ACCIDENTS, AVIATION PERSONNEL, CASUALTIES, CORONARY

DISEASE, DEATH, FORMATS, PILOTS, REPORTS

AB (27) Autopsy reports of 710 pilots involved in fatal general aviation accidents and received by the FAA for the years 1980-82 were reviewed to appraise the age-specific prevalence of coronary atherosclerosis among the autopsied group and compare findings with those of an earlier study of a similar pilot group. Sixty-nine percent of the autopsies on pilots killed in aircraft accidents indicated some degree of coronary atherosclerosis ranging from minimal to severe. This finding is higher than for a similar group of pilots studied during the years 1975-77. However, only about 2.5 percent of the 1980-82 study group were found to have severe coronary atherosclerosis, compared with 5 percent in the previous study. Prevalence of severe coronary atherosclerosis increased with age from 5.8 per 1,000 for ages less than 40 years to 73.9 for ages 50 years and above, also reflecting lower age-specific rates for severe coronary atherosclerosis than were found in the previous study. Recent emphasis on autopsy format and attention to sudden incapacitation is felt to have resulted in more accurate reporting for recent years. Prevalence of severe coronary atherosclerosis among the recently studied pilot group was less than that observed in an earlier study of a similar group.

AN (1) AD-A159 835/XAG

FG (2) 010301
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Flight Operations Noise Tests of Eight Helicopters

AU (10) Yoshikami, S. A.

RD (11) Aug 1985

PG (12) 697 Pages

RS (14) FAA/EE-85-7

RC (20) Unclassified report

DE (23) *HELICOPTERS, *AIRCRAFT NOISE

ACOUSTIC DATA, FLIGHT TESTING, HOVERING, MEASUREMENT, COCKPITS, INSTRUMENT PANELS, FLIGHT, FLIGHT PATHS, ENVIRONMENTS, HELIPORTS,

LAND

USE, PLANNING, LEVEL FLIGHT, NOISE REDUCTION, INSTRUCTIONS, ALTITUDE, RADAR TRACKING, NOISE, PREDICTIONS

AB (27) This document presents acoustical data and flight path information acquired during the FAA/HAI Helicopter Flight Operations Noise Test Program. 'As-measured' noise levels of the Aerospatiale 365N, Agusta 109A, Bell 206L-1 and 222A, Hughes 500D, MBB BK117, Robinson R22, and Sikorsky S76 are presented for various enroute and heliport flight operations. These operations include level flyovers at two altitudes, normal takeoffs, normal and constant-gildeslope approaches, various types of noise abatement approaches, level flight turns and hover (IGE and OGE). The acoustical data are accompanied by radar tracking data and cockpit instrument panel information which document the operational procedures flown, and meteorological measurements to permit data corrections for nonstandard atmospheric conditions. This helicopter operational noise data base can be used in enroute and heliport land use planning, heliport environmental studies and planning guidelines, pilot familiarization and training, verification of noise prediction and estimating methods, and lateral attenuation studies. Additional keywords: heliport, flight operations, noise abatement, directivity approaches.

AN (1) AD-A160 889/XAG

FG (2) 050900

060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Passing Scores for the FAA ATCS Color Vision Test

AU (10) Convey, J. J.

RD (11) Aug 1985

PG (12) 19 Pages

RS (14) DOT/FAA-AM-85-7

RC (20) Unclassified report

DE (23) *COLOR VISION

air traffic controllers, COLORS, CONSISTENCY, DEFECTS(MATERIALS), DISPLAY SYSTEMS, ELEVATION, AIRCRAFT, ESTIMATES, FUSELAGES,

INTERNAL,

METEOROLOGICAL RADAR, NAVIGATION CHARTS, OPTICAL PROPERTIES, PARAMETERS, EYE, TEST AND EVALUATION, PLATES, RADAR EQUIPMENT, RELIABILITY, REQUIREMENTS, TERRAIN, TEST METHODS

AB (27) In response to recommendations from the Office of Personnel Management

for measures of normal color vision that reflects as closely as possible the functional color vision requirements for an air traffic controller (Christup, 1981), subtests which simulated ATC tasks were developed in three content areas: (1) aircraft colors for fuselage and lights, (2) color weather radar displays, and (3) navigational chart terrain elevations. Pickrel and Convey (1983) performed an item analysis on these subtests using data obtained from 41 persons with normal color vision as determined by their performance on the Pseudoisochromatic Plates Test (PIP) from the American Optical Corporation and 22 persons with defective color vision according to the PIP. The item parameters and the internal consistency reliability estimates obtained were satisfactory; however, minimum passing score for each of these tests and for a simple composite of all three. Originator-supplied keywords: Color vision tests; Minimum passing score; Terrain, Elevations; Color normal; Color defective.

AN (1) AD-A161 911/XAG

FG (2) 060500

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Drugs of Abuse in Aviation Fatalities. 1. Marijuana

AU (10) Lacefield, Delbert J.

Roberts, Patricia A.

Grape, Paula M.

RD (11) Aug 1985

PG (12) 6 Pages

RS (14) DOT/FAA/AM-85-8

RC (20) Unclassified report

DE (23) *DEATH, *AVIATION ACCIDENTS, *CANNABIS, *DRUG ABUSE

ALCOHOLS, AVIATION ACCIDENTS, CASUALTIES, DRUG ABUSE, ISOMERS,
MOUTH,

PILOTS, PROPANOLS, SAMPLING

ID (25) Marijuana

AB (27) Isopropyl alcohol swabs taken from the oral cavities of pilots killed in general aviation accidents were analyzed for marijuana by the modified Duquenois-Levine test. During the 2-year period from October 1982 through September 1984, 289 pilot fatalities (of 809 sampled for other toxicological reasons) were sampled for marijuana; a positive test indicated the recent use of marijuana. Six of the pilots' samples (2.1 percent) were positive.

AN (1) AD-A158 925/XAG

FG (2) 061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Some Effects of Alcohol and Simulated Altitude on Complex Performance
Scores and Breathalyzer Readings

AU (10) Collins,W. E.

Mertens,H. W.

Higgins,E. A.

RD (11) Jul 1985

PG (12) 12 Pages

RS (14) DOT/FAA-AM-85-5

RC (20) Unclassified report

DE (23) *ALCOHOL CONSUMPTION, *ALTITUDE

SKILLS, RESPIRATION, PERFORMANCE TESTS, MARGIN OF SAFETY,
ALCOHOLS,

DOSAGE, PERFORMANCE(HUMAN), SCORING, GROUND LEVEL, INTERACTIONS,
BODY

WEIGHT, REDUCTION, GASES, MIXTURES, OXYGEN MASKS, PLACEBOS,
SIMULATION

AB (27) This study assessed possible interactive effects of alcohol and a simulated altitude of 12,500 ft. Each of 17 men was trained on the various tasks that comprise the Multiple Task Performance Battery and then performed over a 2-week period in four experimental sessions, viz, ground level (1,300 ft), with and without alcohol, and altitude (12,500 ft), with and without alcohol. Subjects breathed appropriate gas mixtures through oxygen masks at both ground level and altitude. Subjects performed for 3 hours in the afternoon. Alcohol doses were 2.2 mL of 100-proof vodka per kilogram of body weight mixed with three parts of a selected juice. Each 1-hour test block included five

10-minute performance periods with varying workloads and a 10-minute period for controlled breathalyzer measurements. Results showed no differential effect of simulated altitude on breathalyzer readings (peaks averaged .078% at 12,500 ft and .077% at ground level). The best performance occurred at ground level under placebo conditions; the 12,500-ft simulated altitude produced some decrement for the placebo scores were depressed by altitude. Thus, there was no interactive effect of alcohol and altitude on either breathalyzer readings or performance scores. However, the general decrement produced by altitude (with or without alcohol) serves to reduce further whatever margin of safety remains in performance skills following alcohol ingestion.

(Author)

AN (1) AD-A156 326/XAG

FG (2) 010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT

SYSTEMS

TI (6) U.S. Civil Airmen Statistics for Calendar Year 1984.

DN (9) Annual rept.

RD (11) 31 May 1985

PG (12) 44 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *PILOTS, *STATISTICS

AERONAUTICS, AIR FORCE PERSONNEL, AIRCRAFT, COMMERCIAL AVIATION,
ENGINEERS, EXERCISE(PHYSIOLOGY), FLIGHT, FLIGHT CREWS, GROUND
LEVEL,

HELICOPTERS, INDUSTRIES, INSTRUCTORS, INSTRUMENTATION, MEDICAL
EXAMINATION, MEDICINE, NAVIGATORS, RATINGS, AIR TRAFFIC

CONTROLLERS,

AIRCRAFT, AIRSHIPS

AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active airmen is one who hold both an airmen certificate and a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots, control tower operators, flight navigators, flight engineers, and flight instructors. The glider and lighter-than-air pilots are not required to have a medical

examination but the numbers represent only those who had a valid medical certificate. Mechanics, parachute riggers, ground instructors, and dispatchers certificates represent all certificates on record at the aeronautical center. Key words: certificates held, nonpilot, private, commercial, student, airline transport, glider, helicopter, lighter-than-air, instrument ratings, flight instructors, pilot certificates issued.

AN (1) AD-A156 987/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Effects of Age, Sleep Deprivation, and Altitude on Complex Performance

AU (10) Mertens, H. W.

Collins, W. E.

RD (11) May 1985

PG (12) 22 Pages

RS (14) FAA-AM-85-3

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *AVIATION PERSONNEL, *PHYSIOLOGICAL EFFECTS

DOCUMENTS, ALTITUDE, AGING(PHYSIOLOGY), GROUND LEVEL, ARITHMETIC, MENTAL ABILITY, ALTITUDE, PERFORMANCE(HUMAN), SLEEP DEPRIVATION, AERONAUTICS, FUNCTIONS, MEASUREMENT, PSYCHOLOGY, INDICATOR

LIGHTS,

MONITORING, WARNING SYSTEMS, INTERACTIONS, SLEEP, WARNING

SYSTEMS,

AGING(PHYSIOLOGY), WORKLOAD, PROBLEM SOLVING, TRACKING, AVIATION MEDICINE, MEDICAL RESEARCH

AB (27) Little research has been concerned with the combined effects on performance of age, sleep deprivation, and altitude. This study examined their potential interaction with laboratory tasks measuring aviation-related psychological functions. Healthy men in two age groups, 30-39 yr (N=16) and 60-69 yr (N=14), were evaluated for complex (time-shared) performance in the four possible combinations of two altitudes (ground level vs. 3,810 m (12,500 ft)) and two sleep conditions (sleep permitted vs. sleep deprived). Following training, performance was evaluated during 3-h test sessions in the morning and afternoon of each of 4 test days. Complex performance, measured by the Multiple Task Performance Battery (MTPB), included: monitoring of warning lights and meters, mental arithmetic, problem solving, target

identification, and tracking. Workload was varied within each hour by varying the tasks performed simultaneously. Performance was significantly lower in the older subjects, but age did not interact significantly with sleep deprivation or altitude. When subjects were rested, altitude had no effect. When subjects were sleep deprived, performance was significantly lower in general, and the greatest decrement in performance occurred at altitude. Increasing workload enhanced the interaction of sleep deprivation and altitude. The performance of older subjects tended to be more affected by increases in workload, but decrements induced by sleep deprivation and altitude did not appear to interact with age. These findings provide empirical evidence in support of warnings in the aeromedical literature concerning greater effects of sleep deprivation as altitude increases within the general aviation range.

AN (1) AD-A157 400/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Inhalation Toxicology. IV. Times to Incapacitation and Death for Rats Exposed Continuously to Atmospheric Hydrogen Chloride Gas

AU (10) Crane, C. R.

Sanders, D. C.

Endecott, B. R.

Abbott, J. K.

RD (11) May 1985

PG (12) 22 Pages

RS (14) FAA-AM-85-4

RC (20) Unclassified report

NO (21) See also AD-A133 221.

DE (23) *TOXICOLOGY, *INHALATION, *HYDROGEN CHLORIDE AIRCRAFT FIRES, REGRESSION ANALYSIS, RATS, TIME, IRRITATING AGENTS, LETHAL DOSAGE, TIME, LETHALITY, AIRCRAFT CABINS, COMBUSTION, EQUATIONS,

HUMANS, LABORATORY ANIMALS, LOSSES, DEATH, EXPOSURE(GENERAL), GASES, SMOKE

AB (27) Laboratory rats were exposed continuously to measured atmospheric concentrations of hydrogen chloride (HC1) gas until they expired. The exposure time required to produce lethality was measured, as was the time at which physical incapacitation occurred. Incapacitation was defined operationally as loss of the ability to walk in a motor-driven

wheel. These two endpoints, time-to-incapacitation and time-to-death, were equated to atmospheric HC1 concentration by statistically derived regression equations. The possible relationship between the effective toxic doses of HC1 gas for rats and those reported for humans is discussed. Originator supplied keywords include: Combustion toxicology; Smoke, Irritant gas; Time-to-incapacitation; Time-to-death; Aircraft cabin fire.

AN (1) AD-A157 439/XAG

FG (2) 130800

210400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Practical Real-Time Quality Control of Antimisting Kerosene.

DN (9) Final rept.

AU (10) Hoover,R.

Ferrara,A.

RD (11) May 1985

PG (12) 71 Pages

RS (14) DOT/FAA/CT-85/1

RC (20) Unclassified report

DE (23) *QUALITY CONTROL, *KEROSENE, *FUEL ADDITIVES

ANTIFOGGING AGENTS, DIES, EXPANSION, CORRECTIONS, FUELS, PRESSURE MEASUREMENT, REAL TIME, SLURRIES, TEST METHODS, FIRE PROTECTION, CRASHES, IMPACT, SURVIVABILITY, RHEOLOGY, BLENDING, VISCOELASTICITY

AB (27) Antimisting kerosene was developed to provide fire protection during impact survivable crashes. When the technique of blending AMK from a slurry was developed, a need arose to insure the quality of the individual blends. This report describes a die swell test procedure developed for real-time quality control of inline blended AMK. The procedure provides readouts on the concentration of the antimisting additive in the fuel and it indicates in real-time any non-homogeneity of the blended AMK. Additional tests are described which show the behavior of AMK is time dependent. Originator supplied keywords include: Die swell; Rheology; End corrections; Antimisting kerosene; Fire protections; Visco-elastic; Pressure measurements; Quality control.

AN (1) AD-A157 095/XAG

FG (2) 120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PLANS

TI (6) Statistical Sampling of Aircraft Operations at Non-Towered Airports

AU (10) Ford,M.

Shirack,R.

RD (11) Apr 1985

PG (12) 49 Pages

RS (14) FAA-APO-85-7

RC (20) Unclassified report

DE (23) *AIR TRAFFIC, *AIRPORTS, *RECORDS MANAGEMENT, *STATISTICAL SAMPLES

ADMINISTRATIVE PERSONNEL, AIRCRAFT, OPERATION, RECORDS, COST EFFECTIVENESS, DISTRIBUTION, FREQUENCY, HANDBOOKS, PLANNING, FORECASTING, COSTS, IMPACT, DATA ACQUISITION, DECISION MAKING, INVESTMENTS, NUMBERS, STATISTICAL PROCESSES, CLUSTERING,

SAMPLING,

STRATIFICATION, COUNTING METHODS, SAMPLING

ID (25) *Nontowered airports

AB (27) The purpose of this handbook is to provide a statistically sound method of estimating aircraft operations at non-towered airports from sampling counts. The handbook is written for planners, engineers, airport operators responsible for aircraft planning, and persons that collect data for FAA airport Master Records (Form 5010.1). Many of these users will be familiar with general aviation airports, but not necessarily with statistical methods. Accurate information on aircraft activity at non-towered airports is a major need of airport owners and operators as well as planners and administrators charged with the planning and development of the airport system. Unlike towered airports, where air traffic controllers keep constant tallies of activity, most non-towered airports have no accurate record of usage. Obtaining accurate aircraft activity counts will provide a variety of benefits. Investment decisions can be made with more confidence if benefit-cost analysis is based on accurate information about use of the facility. Design criteria, which may have a significant impact on development and operating costs, can be more efficiently applied. Even when decisions are based on forecasts rather than present circumstances, accurate base data is necessary to make accurate forecasts of activity. Keywords: Statistical sampling, Sample size, Random numbers, Precision of the estimate, Frequency distribution, Peak operations, Stratified cluster sampling, Estimating procedures.

AN (1) AD-A159 511/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 21, 1 Jul-31 Dec 84.

RD (11) 12 Apr 1985

PG (12) 20 Pages

RS (14) DOT/FAA-ACS-84-2-21

RC (20) Unclassified report

NO (21) Report of the Administrator of the Federal Aviation Administration to Congress.

DE (23) *CIVIL AVIATION, *COMMERCIAL AVIATION, *SECURITY AIR TRANSPORTATION, OPERATIONAL EFFECTIVENESS, AIRCRAFT HIJACKING, PREVENTION, PASSENGER AIRCRAFT, PASSENGERS, BOMBS, AIRPORTS,

SABOTAGE,

AVIATION SAFETY

AB (27) This report provides details on the effectiveness of security screening of passengers and all property intended to be carried in the aircraft cabin in air transportation or intrastate air transportation. It also provides a statistical summary of aircraft hijackings and alleged violations of Federal Aviation regulations pertaining to security screening. (Author).

SE (34) 21

AN (1) AD-A154 319/XAG

FG (2) 010500

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND

ENERGY

TI (6) Aviation Noise Effects

AU (10) Newman, J. S.

Beattie, K. R.

RD (11) Mar 1985

PG (12) 117 Pages

RS (14) FAA-EE-85-2

RC (20) Unclassified report

DE (23) *NOISE(SOUND), *AIRCRAFT NOISE

ENVIRONMENTAL IMPACT, AIRCRAFT INDUSTRY, LITERATURE SURVEYS, ECONOMIC

IMPACT, ANIMALS, AERONAUTICS, NOISE, HEARING, HELICOPTERS, IMPULSE NOISE, ACOUSTIC WAVES, LOW FREQUENCY, DEAFNESS, HUMANS,

RESPONSE,

COMPATIBILITY, LAND USE, CONTOURS, VALUE, INTERFERENCE, SPEECH, SLEEP,

DAY, TIME

ID (25) *Aviation noise, Real estate values

AB (27) This report summarizes the effects of aviation noise in many areas, ranging from human annoyance to impact on real estate values. It also synthesizes the findings of literature on several topics. Included in the literature were many original studies carried out under FAA and other Federal funding over the past two decades. Efforts have been made to present the critical findings and conclusions of pertinent research, providing, when possible, a 'bottom line' conclusion, criterion or perspective. Issues related to aviation noise are highlighted, and current policy is presented. Specific topic addressed include: Annoyance; Hearing and hearing loss; Noise metrics; Human response to noise; Speech interference; Sleep interference; Non-auditory health effects of noise; Effects of noise on wild and domesticated animals; Low frequency acoustical energy; Impulsive noise; Time of day weightings; Noise contours; Land use compatibility; and Real estate values. This document is designed for a variety of users, from the individual completel unfamiliar with aviation noise to experts in the field. Keywords include: Helicopters; and Environmental impact.

AN (1) AD-A155 226/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS ENGINEERING

SERVICE

TI (6) Response to NAS (National Airspace System) Plan Audit Report Recommendations.

DN (9) Final rept.

AU (10) Chu, V.

Loewenstein, J.

RD (11) Mar 1985

PG (12) 123 Pages

RS (14) DOT/FAA/ES-85/1

RC (20) Unclassified report

DE (23) *AIR SPACE

AUDITING, PLANNING

ID (25) *NAS(National Airspace System), *National Airspace System

AB (27) This report presents FAA's position and response on each of the System Engineering and Integration (SEI) contractor's recommendations as contained in Section 6 of the NAS Plan Audit Report, ATC-84-0026, dated August 1984. It also serves to punctuate the SEI contractor's

responsibilities in implementing the NAS Plan. Keywords: National Airspace System (NAS) Plan, NAS Implementation.

AN (1) AD-A156 946/XAG

FG (2) 010300

050200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Federal Aviation Regulations. part 135. Cabin Safety Subject Index

AU (10) Pollard, D. W.

Steen, J. A.

Penland, T.

RD (11) Mar 1985

PG (12) 15 Pages

RS (14) FAA-AM-85-1

RC (20) Unclassified report

DE (23) *AIRCRAFT CABINS, *SAFETY, *COMMERCIAL AVIATION, *CIVIL AVIATION ADVISORY ACTIVITIES, SUBJECT INDEXING, AVIATION MEDICINE, REPORTS, AERONAUTICS, REGULATIONS, UNITED STATES GOVERNMENT, AWARENESS

AB (27) To promote awareness and facilitate finding the most frequently mentioned cabin safety subjects pertinent to Federal Aviation Administration (FAA) part 135 operations, an index of references was developed. This includes Federal Aviation Regulation numbers, Air Carrier Operations Bulletin numbers, Advisory Circular numbers, and Office of Aviation Medicine report numbers.

AN (1) AD-A157 403/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM ENGINEERING AND

MAINTENANCE SERVICE

TI (6) Traffic Alert and Collision Avoidance System - Operational Simulation.

DN (9) Final rept. Apr 82-Mar 84

AU (10) Boucek, G. P.

Pfaff, T. A.

White, R. W.

Smith, W. D.

RD (11) Mar 1985

PG (12) 203 Pages

RS (14) DOT/FAA/PM-85/10

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIRCRAFT, *COLLISION AVOIDANCE ABNORMALITIES, FLIGHT, FLIGHT DECKS, COCKPITS, FLIGHT CREWS, PILOTS, TEST AND EVALUATION, AIRCRAFT, PERFORMANCE(ENGINEERING), WARNING SYSTEMS, DISPLAY SYSTEMS, REQUIREMENTS, INFLIGHT, SIMULATION, RESPONSE,

SIGNALS, VISION, DETECTION, TRANSPORT

ID (25) TCAS(Traffic Alert and Collision Avoidance System), Traffic alert and collision avoidance system, Aircraft separation assurance

AB (27) This report describes one of a series of studies being conducted to develop the Traffic Alert and Collision Avoidance System (TCAS). The purpose of this study was to conduct a pilot evaluation of the relationship between TCAS displays, an operational crew station, aircraft performance, TCAS logic and operational TCAS procedures. The specific objectives of the evaluation were to be: Develop and evaluate the operational procedures associated with TCAS alerts under both normal and abnormal flight operations; Assess changes in flight deck operations associated with TCAS; Assess operational procedures as related to ATC control; Assess the impact of TCAS display requirements on flight deck systems and geometry. During the evaluation experienced transport pilots were presented TCAS alerts while flying a high fidelity B737-200 training simulator. Their response to the alerts was observed and recorded as were their opinions concerning the system. As a result of reviewing pilot responses to 552 TCAS encounters with a total of 970 intruder aircraft, it is recommended that TCAS be revised to achieve more consistently correct pilot response. Keywords: Collision Avoidance, Aircraft Separation Assurance; Alert; Warning Systems; Signal Response; Visual Alerts; Signal Detection.

AN (1) AD-A157 689/XAG

FG (2) 050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMR FOR

DEVELOPMENT AND LOGISTICS

TI (6) Handbook for Preparing and Printing FAA Formal Technical Reports.

RD (11) Mar 1985

PG (12) 25 Pages

RS (14) DOT/FAA/DL-85/1

RC (20) Unclassified report

DE (23) *HANDBOOKS, *TECHNICAL WRITING

AERONAUTICS, COMPUTER PROGRAMS, COSTS, DISKS, MAGNETIC TAPE, MICROFICHE, PRINTING, REDUCTION, REPORTS, VIDEO TAPES, FORMATS

ID (25) FAA(Federal Aviation Administration)

AB (27) This document provides procedures for the preparation of Federal Aviation Administration (FAA) formal technical reports to ensure that results of programs are documented and printed in a uniform and cost-effective manner. This document contains procedures for mostly paper and microfiche copy. However, paragraph 8 contains new information on the submission of phonograph records and cassettes, computer program magnetic tape reports, computer floppy disks, and video tapes. The application of this standard aids in the interchange of technical information and in the reduction of costs in preparation, publication, and dissemination of such information. Reports are the principal means by which the FAA informs other Government departments/agencies and the aviation community of its performance of programs to meet the National Airspace System.

AN (1) AD-A151 050/XAG

FG (2) 010500
050300
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY
AND PLANS

TI (6) FAA Aviation Forecasts - Fiscal Years 1985-1996.

RD (11) Feb 1985

PG (12) 108 Pages

RS (14) FAA-APO-85-2

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *CIVIL AVIATION

AIR TRAFFIC CONTROL SYSTEMS, ROUTING, AIRPORT CONTROL TOWERS,
MILITARY

AIRCRAFT, STATISTICAL DATA, AVIATION FUELS, AIRCRAFT INDUSTRY,
ECONOMIC

ANALYSIS, FORECASTING, PLANNING PROGRAMMING BUDGETING

ID (25) General aviation

AB (27) This report contains the Fiscal Years 1985-1996 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities.

These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public. The overall outlook for the forecast period is for

strong economic growth, relatively stable real fuel prices, and moderate inflation. Based upon these assumptions, aviation activity is forecast to increase by Fiscal Year 1996 by 62 percent at towered airports (commuters, 70 percent; air carrier, 28 percent; general aviation, 74 percent; military, 0 percent), 44 percent at air route traffic control centers (commuters 102 percent; air carriers, 38 percent; general aviation, 51 percent; military, -2 percent), and 47 percent in flight services performed. Hours flown by general aviation is forecast to increase 45 percent and helicopter hours flown 84 percent. Scheduled domestic revenue passenger miles (RPM's) are forecast to increase 78 percent, with scheduled international RPM's forecast to increase by 82 percent commuter RPM's forecast to increase by 100 percent. Additional keywords: civil aviation, economic analysis, planning programming budgeting, airports. (Author)

AN (1) AD-A152 338/XAG

FG (2) 220200
250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMR FOR

DEVELOPMENT AND LOGISTICS

TI (6) FAA (Federal Aviation Administration) Assessment of Satellite Concepts and Aviation Spectrum Requirements.

DN (9) Technical rept.

AU (10) Bock, R. F.

Buige, A.

Foose, V. E.

Johnson, R.

Kalafus, R. M.

RD (11) Feb 1985

PG (12) 98 Pages

RS (14) DOT/FAA/DL-85/2

RC (20) Unclassified report

DE (23) *SATELLITE COMMUNICATIONS

AERONAUTICS, SAFETY, NAVIGATION, L BAND, SHARING, GLOBAL POSITIONING SYSTEM, SURVEILLANCE

ID (25) Federal aviation administration

AB (27) This report documents an FAA effort that identified aeronautical safety related air-ground services that might be provided in the future by satellite services, made estimates of L-band frequency spectrum for these satellites, and developed an approach and conditions for sharing satellite services with other users. Originator supplied keywords

include: Satellite concepts; Frequency spectrum; Satellite sharing;
Communications; Sharing conditions; Navigation; Surveillance; GPS;
L-band. (Author).

AN (1) AD-A153 577/XAG

FG (2) 131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Suppression and Control of Class C Cargo Compartments Fires.

DN (9) Final rept. Aug 83-Jun 84

AU (10) Blake, D. R.

RD (11) Feb 1985

PG (12) 33 Pages

RS (14) DOT/FAA/CT-84/21

RC (20) Unclassified report

DE (23) *FIRES, *FIRE SUPPRESSION

BURNERS, LININGS, DETECTORS, SMOKE, CARGO, COMPARTMENTS,
BURNTHROUGH,

TEST AND EVALUATION, CONFIGURATIONS, FIRE EXTINGUISHING AGENTS

ID (25) Halon-1301

AB (27) A total of 23 fire tests were conducted in a 2357-cubic foot simulated class C cargo compartment. Various lining materials, fire sources, loading configurations, and smoke detectors were used to determine the ability of class C cargo compartments to control fires. The simulated class C cargo compartment did not successfully control the test fires in all cases. The major conclusion of this study is that the 45 degrees bunsen burner test specified in FAR 25.855 does not assure that cargo liners will not burn through when subjected to realistic fires.
Keywords: Class C, Halon 1301, and Burn-through.

AN (1) AD-A154 818/XAG

FG (2) 010600

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) FAA/GAMA (Federal Aviation Administration/General Aviation Manufacturer's Association) Propeller Aircraft Noise Test Program, Salina Municipal Airport, Salina, Kansas.

RD (11) Feb 1985

PG (12) 44 Pages

RS (14) FAA-EE-85-1

RC (20) Unclassified report

DE (23) *NOISE REDUCTION, *TAKEOFF, *AIRCRAFT NOISE
AERIAL PROPELLERS, AIRCRAFT, DATA ACQUISITION, ENGINES, HANDBOOKS,
KANSAS, MANUFACTURING, MEASUREMENT, NOISE, PILOTS, POWER,
PROPELLERS,

REDUCTION, CIVIL AVIATION, ACOUSTIC MEASUREMENT, AIRPORTS

ID (25) General aviation, Propeller driven aircraft, Single engine aircraft,
Reduced power takeoffs

AB (27) In September, 1984, the FAA, with the cooperation and support of the General Aviation Manufacturers' Assoc. (GAMA), conducted a noise measurement program on small propeller-driven aircraft at Salina Municipal Airport, Salina, Kansas. The program objectives were: (1) to obtain takeoff noise data using prepared international and U.S. certification procedures for propeller-driven small airplanes; and (2) to measure the benefits of noise abatement takeoff procedures being developed by the manufacturers for inclusion in the Pilot's Operating Handbook. For the five twin and four single engine aircraft tested, the results show an average noise reduction of 4.4 decibels when using reduced power procedures after takeoff. Keywords: General aviation; Noise abatement; Operating procedures.

AN (1) AD-A155 751/XAG

FG (2) 050900

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Physiological Responses to Unvarying (Steady) and 2-2-1 Shifts: Miami International Flight Service Station

AU (10) Melton, C. E.

RD (11) Feb 1985

PG (12) 33 Pages

RS (14) FAA-AM-85-2

RC (20) Unclassified report

DE (23) *WORK, *SCHEDULING, *AIR TRAFFIC CONTROLLERS
JOBS, AIRPORTS, MANHOURS, TIME, FATIGUE(PHYSIOLOGY), JOB
SATISFACTION,

CATECHOLAMINES, WATCH(DUTY), ROTATION, SHIFTING, BIOCHEMISTRY,
URINE,

DAY, PHYSIOLOGICAL EFFECTS, RESPONSE(BIOLOGY)

AB (27) Two types of shift rotation in the same air traffic facility were investigated in order to determine the relative advantages and disadvantages of nonrotating shift work (steady shift) and rotating

shift work. The rotating shift work chosen for comparison was a 2-2-1 pattern often preferred by air traffic controllers, and which consists of a schedule of progressively earlier work periods throughout the workweek, with 9 to 14 hours off duty between 8-hour work periods, and an extended off-duty period of 80 hours between workweeks. Objective differences, as judged by urine biochemistry, between workers on the two shift patterns are minimal and insignificant statistically. Generally, however, greater fatigue was reported in connection with the 2-2-1 rotation than with the steady shift, both preshift and postshift. When prework to postwork changes in subjective fatigue were compared for the two shift patterns, no statistically significant differences were noted. Within the 2-2-1 schedule, there was (i) significantly greater excretion of catecholamines on the day watch as compared to the evening watch; and (ii) significantly greater preshift fatigue reported on day shift than evening shift. Despite the observed differences between and within the steady and rotating shift patterns, employee participation in shift pattern choice may have contributed greatly to worker contentment and willingness to accept the observed stressors. Keywords: Shift Work, Air Traffic Controllers, Biochemistry, Fatigue, Employee Participation.

AN (1) AD-A151 412/XAG
FG (2) 010500
050100
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) National Airspace Review. Implementation Plan. Revised.
RD (11) Jan 1985
PG (12) 51 Pages
RC (20) Unclassified report
NO (21) Supersedes report dated Jun 84, AD-A145 379.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIR SPACE
AIR TRAFFIC CONTROL TERMINAL AREAS, AIR TRAFFIC, MANAGEMENT
PLANNING
AND CONTROL, EFFICIENCY, FLIGHT PATHS, ROUTING, CANADA, UNITED
STATES,
MEXICO, COOPERATION, AERONAUTICS, UNITED STATES GOVERNMENT,
INTERNATIONAL, SEPARATION, AIRCRAFT INDUSTRY, REGULATIONS,
HELICOPTERS,
STANDARDS, WEATHER
ID (25) National Airspace Review, Traffic management
AB (27) Since the summer of 1982, the Federal Aviation Administration (FAA) has
been hosting task group working sessions of the National Airspace

Review (NAR). The NAR is a cooperative venture by the aviation industry and government. The NAR is comprehensively reviewing current air traffic control procedures, flight regulations, and airspace for the purpose of validating the current system or identifying near-term changes which will promote greater efficiency. As a component of the National Airspace System Plan, the NAR will provide the operational framework for moving into the next generation National Airspace System. In the area of procedures, task groups have covered: terminal services, weather programs, traffic flow management, helicopter operations, separation standards and the national Flight Data System. In the regulations area, task groups have covered: regulated terminal airspace areas, and some aspects of airways and routes establishment and revocation. In the area of airspace task groups have covered: terminal and en route airspace configuration, routes, United States/Canada/Mexico interface, charts, Air Route Traffic Control Center infrastructure, and airspace reclassification. Study areas remaining to be reviewed are FAA Handbooks, several regulatory areas, and international airspace. Working sessions covering these areas will extend to the fall of 1984.

AN (1) AD-A152 369/XAG
FG (2) 010500
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) National Airspace Review. Change 1.
DN (9) Interim rept.
RD (11) Jan 1985
PG (12) 119 Pages
RC (20) Unclassified report
NO (21) Supersedes AD-A147 768.
DE (23) *AIR TRAFFIC CONTROLLERS, *AIR SPACE
FLIGHT, REGULATIONS, STANDARDS, WEATHER, AIRCRAFT INDUSTRY,
HELICOPTERS, INFORMATION SYSTEMS, FLOW, MANAGEMENT, TRAFFIC,
UNITED
STATES, AIR TRAFFIC CONTROL TERMINAL AREAS, AIRPORTS
ID (25) *NAR(National Airspace Review), Base operations
AB (27) Since the summer of 1982, the Federal Aviation Administration (FAA) has
been hosting task group working sessions of the National Airspace
Review (NAR). The NAR is a cooperative venture by the aviation industry
and government. The NAR is comprehensively reviewing current air
traffic controller procedures, flight regulations, and airspace for the
purpose of validating the current system or identifying near-term
changes which will promote greater efficiency. As a component of the

National Airspace System Plan, the NAR will provide the operational framework for moving into the next generation National Airspace System (NAS). In the area of procedures, task groups have covered: terminal services, weather programs, traffic flow management, helicopter operations, separation standards and the National Flight Data System.

AN (1) AD-B169 887/XAG

FG (2) 010200

010301

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Global Positioning System Performance During FAA Helicopter Test on Rotor Effects.

DN (9) Technical note

AU (10) Connor, Jerome T.
Paolacci, George

RD (11) Jan 1985

PG (12) 23 Pages

RS (14) DOT/FAA/CT-TN84/47

RN (18) XH-DOT/FAA/PM

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *GLOBAL POSITIONING SYSTEM, *HELICOPTERS, *ROTOR BLADES,
*INTERFERENCE

MANAGEMENT, OPERATION, RECEIVERS, TEST AND EVALUATION, TURBINES,
UTILITY AIRCRAFT, HELICOPTER ROTORS

ID (25) S-76 Aircraft, UH-1H Aircraft, Magnavox Z-set GPS Receiver, Federal
Aviation Administration tests, Single channel GPS Receiver

DL (33) 12

AN (1) AD-P004 678/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION DES PLAINES ILL GREAT LAKES REGION

TI (6) Establishment and Maintenance of Certification Standards for Helicopter and Turboprop Power Transmission Systems

AU (10) Ferris, H. W.

RD (11) Jan 1985

PG (12) 7 Pages

RC (20) Unclassified report

NO (21) This article is from 'Gears and Power Transmission Systems for
Helicopters and Turboprops; Conference Proceedings: Propulsion and

Energetics Panel Symposium (64th) Held at Lisbon, Portugal on 8-12
October 1984,' AD-A152 673, p35-1-35-7.

DE (23) *TURBOPROP ENGINES, *DRIVES

RELIABILITY, STANDARDS, AVIATION SAFETY, QUALIFICATIONS, REGULATIONS

ID (25) Certification, NATO furnished, Component Reports

AB (27) This paper discusses how the Federal Aviation Administration (FAA) develops qualification/certification safety standards for helicopter and engine turboprop drive systems. The rules are always generated in coordination with industry for a minimum of economic impact, and are worded to promote design innovation while maintaining adequate safety. The rules are periodically updated to account for service experience and advancements in the state-of-the-art. A survey of the applicable Federal Aviation Regulations (FAR's) explains how all safety aspects of a new drive system are covered during the initial certification program. The FAR's also provide for continued airworthiness, as service experience is accumulated, such that inspection intervals may be increased on 'on condition', or decreased, if service difficulties indicate that an area of redesign is required. As further testing continues, initial limitations on component replacement times are relaxed until operating costs decrease to a minimum as the design reaches maturity. The FAA role is to assist industry in the promotion of aviation without compromising safety.

AN (1) AD-A168 121/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR

FOR AIRPORTS

TI (6) Report of Accomplishments under the Airport Improvement Program.

DN (9) Annual rept. no. 4 for period ending 30 Sep 85

AU (10) Hetsko, Jean

RD (11) 1985

PG (12) 133 Pages

RS (14) FAA-ARP-86-1, FAA-ARP-11

RC (20) Unclassified report

DE (23) *AIRPORTS

GRANTS, TABLES(DATA), OPTIMIZATION

ID (25) AIP(Airport Improvement Program)

AB (27) This report consists primarily of a table which lists the Airports Grant-in-Aid Program Projects which place under grant agreement in FY 1985. Brief descriptions are provided of the work to be performed under each grant. Historical and administrative information about the AIP is also included.

AN (1) AD-A178 050/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS

TI (6) FAA Statistical Handbook of Aviation for Calendar Year 1985.
DN (9) Annual rept.
RD (11) 1985
PG (12) 118 Pages
RC (20) Unclassified report
DE (23) *CIVIL AVIATION, *STATISTICAL DATA
AIR FORCE PERSONNEL, AIR TRAFFIC, AIR TRANSPORTATION, AIRCRAFT,
AIRPORTS, AVIATION ACCIDENTS, AERONAUTICS, DICTIONARIES, EXPORTS,
HANDBOOKS, IMPORTS, PRODUCTION, TABLES(DATA)
AB (27) This report presents statistical information pertaining to the Federal
Aviation Administration, the National Airspace System, Airports,
Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents,
Aeronautical Production and Imports/Exports, and a Glossary of the
terms used in this publication. Keywords: Tables(data); air traffic.
(Author)

AN (1) AD-A186 256/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Project SAFE: A Blueprint for Flight Standards. Part 1.
RD (11) 1985
PG (12) 140 Pages
RC (20) Unclassified report
DE (23) *AVIATION SAFETY
AERONAUTICS, DYNAMICS, STANDARDS, INSPECTION
ID (25) Safe Project
AB (27) This report contains the findings of Project SAFE and a blueprint for
revamping the Federal Aviation Administration's management of its
Flight Standards field operations. It is based on a comprehensive
evaluation of FAA's existing operations and describes changes necessary
if FAA is to improve safety in a dynamic aviation environment.

AN (1) AD-A148 171/XAG
FG (2) 010500

010600
050200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS
TI (6) FAA (Federal Aviation Administration) Statistical Handbook of Aviation,
Calendar Year 1983.
DN (9) Annual rept.
RD (11) 31 Dec 1984
PG (12) 199 Pages
RC (20) Unclassified report
DE (23) *Air traffic, *Handbooks
Civil aviation, Aviation accidents, Airports, International airports,
Commercial aviation, Passengers, Terminal flight facilities,
Aeronautics, Air transportation, Statistical data, Tables(Data)
ID (25) General aviation
AB (27) This report presents statistical information pertaining to the Federal
Aviation Administration, the National Airspace System, Airports,
Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents,
Aeronautical Production and Imports/Exports, and a Glossary of the
terms used in this publication. (Author)

AN (1) AD-A150 441/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Planned Office and Facility Consolidations: To Improve System
Effectiveness and Efficiency, FY 1985-87.
RD (11) 01 Dec 1984
PG (12) 106 Pages
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Airport control towers
Ground controlled approach radar, Office buildings, Planning,
Facilities, Airports, Flight, Stations, Standards, Aeronautics
AB (27) This revised plan, which was directed by House Report 98-1159
accompanying the FY-1985 Continuing Appropriations Resolution, has the
same basic objectives as the FY-1984 effort. Perhaps the most important
difference is that the need to implement it is even more compelling.
The program outlined below updates the previously published plan for
field office and facility consolidations, and encompasses actions
through fiscal year 1987. Flight Service Station (FSS)
Modernization/Consolidation, Airport Traffic Control Tower (ATCT)
Closures, Consolidation of the Functions of the Terminal Radar Approach

Control Facilities (TRACON) and the Air Route Traffic Control Centers (ARTCC), Realignment of the Airway Facilities Sector Offices (AFSO's), Consolidation of Aviation Standards (AVS) Field Offices.

AN (1) AD-A150 743/XAG

**FG (2) 050100
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) National Airspace Review Enhancement Plan. Revision 3.

RD (11) 19 Dec 1984

PG (12) 64 Pages

RC (20) Unclassified report

NO (21) Revision of report dated 13 Apr 84.

DE (23) *MANAGEMENT PLANNING AND CONTROL, *AIR TRAFFIC CONTROL SYSTEMS, *AIR

SPACE

CIVIL AVIATION, REGULATIONS, UNITED STATES, MANAGEMENT, AIR TRAFFIC, ALLOCATIONS

ID (25) NARE(National Airspace Review Enhancement)

AB (27) On April 22, 1982, the National Airspace Review (NAR) plan was published in the Federal Register (47 FR 17448). The plan encompassed a review of airspace use and the procedural aspects of the Air Traffic Control (ATC) system. This comprehensive plan contained an administrative structure and some detailed task assignments which have resulted in recommendations to the FAA. On April 13, 1984, a revision to the original plan was published in the Federal Register (49 FR 14823). This December 19, 1984, notice outlines changes which have been made to the April 13, 1984, revision. The NAR Plan has been retitled as the National Airspace Review Enhancement (NARE) Plan to reflect the expanded scope of this undertaking. Included is the addition of studies to review the airspace allocation, procedural, and regulatory aspects of improvements scheduled under the National Airspace System (NAS) plan and the shift of program sponsorship from the Associate Administrator for Air Traffic to the Director of Management Systems. Only the studies scheduled through June 30, 1985 are firm commitments. The other studies through 1990 are tentative pending a more detailed review by the Executive Committee.

AN (1) AD-A151 075/XAG

**FG (2) 010300
140200
210200**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Preliminary Evaluation of an Improved Flammability Test Method for Aircraft Materials.

DN (9) Final rept.

AU (10) Sarkos, C. P.

Filipczak, R. A.

Abramowitz, A.

RD (11) Dec 1984

PG (12) 49 Pages

RS (14) DOT/FAA/CT-84/22

RC (20) Unclassified report

DE (23) *AIRCRAFT MODELS, *FIRE RESISTANT MATERIALS, *FLAMMABILITY, *TEST METHODS

AIRCRAFT CABINS, AIRCRAFT PANELS, BURNING RATE, BURNERS, EXPOSURE(GENERAL), HONEYCOMB STRUCTURES, UNIVERSITIES,

CALORIMETRY,

DEPLETION, OXYGEN, PHENOLIC PLASTICS, IGNITION, RADIANT HEATING PANELS

AB (27) Small-scale flammability test methods were evaluated by comparing data obtained on a series of interior honey-comb panels with fire test results obtained with a 1/4-scale cabin model. Generally, the vertical Bunsen burner, limiting oxygen index and radiant panel test methods ranked the phenolic-faced panels higher (better performance) than the epoxy-faced panels. It appears as if these test methods, which employ relatively moderate exposure conditions, are reflecting the superior ignition resistance of the phenolics over the epoxies. Thus, these tests cannot predict the performance of materials that exhibit high burning rates when subjected to heating conditions used in the Ohio State University (OSU) apparatus, however, can be set at higher levels. At 5 watts/sq cm, rank ordering materials based on peak heat release rate measured via oxygen depletion in the OSU apparatus agreed with materials ranking in the 1/4-scale model. Based on the scope of this investigation, the OSU apparatus operated at these conditions and employing oxygen depletion calorimetry is the recommended improved fire test method for interior panels.

AN (1) AD-A161 787/XAG

FG (2) 120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT

SYSTEMS

TI (6) Airport Activity Statistics of Certificated Route Air Carriers, 12

Months Ending December 31, 1984.

RD (11) 31 Dec 1984

PG (12) 365 Pages

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION

AIRPORTS, STATISTICS, CARGO, AIRCRAFT, DOMESTIC, INTERNATIONAL,
OPERATION, POSTAL SERVICE, PASSENGERS, AIR TRANSPORTABLE

EQUIPMENT,

SCHEDULING

ID (25) Departures

AB (27) This report furnishes airport activity of the large Certificated Route

Air Carriers. Included in the detailed data contained in Table 6 are
passenger enplanements, tons of enplaned freight, express, and mail.
Both scheduled and non-scheduled service, and domestic and
international operations are included. These data are shown by airport
and carrier. Table 7 includes departures by airport, carrier and type
of operation, and type of aircraft. Keywords: Departures; Scheduled
service; Non-scheduled service; Domestic; and International.

AN (1) AD-A168 055/XAG

FG (2) 010309

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**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT**

SYSTEMS

TI (6) Census of U.S. Civil Aircraft for Calendar Year 1984.

DN (9) Annual rept.

RD (11) 31 Dec 1984

PG (12) 342 Pages

RS (14) FAA-AMS-420

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *COMMERCIAL AIRCRAFT, *TRANSPORT AIRCRAFT

AIRCRAFT, AIRCRAFT INDUSTRY, INVENTORY, PASSENGER AIRCRAFT, UNITED
STATES, TABLES(DATA)

ID (25) Census

AB (27) This report presents information about the U.S. civil aircraft fleet.

It includes detailed tables of air carrier aircraft and an inventory of
registered aircraft by manufacturer and model, and general aviation
aircraft by state and county of the owner. (Author)

AN (1) AD-A150 954/XAG

FG (2) 170703

170900

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY**

AND PLANS

TI (6) An Analysis of the Impacts of the Airport Radar Service Area (ARSA)

AU (10) Geisinger, K.

RD (11) Nov 1984

PG (12) 42 Pages

RS (14) FAA-APO-85-1

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIRPORT RADAR SYSTEMS
COLLISION AVOIDANCE, LANDING AIDS, WORKLOAD, AIR SPACE

ID (25) *ARSA(Airport Radar Service Area), TRSA(Terminal Radar Service Area)

AB (27) The Airport Radar Services Area (ARSA) is a new concept in thermal
airspace design that has been proposed as a replacement for the
Terminal Radar Service Area (TRSA) which has been installed at 137
locations in the U.S. The primary difference between them is that
pilots can enter the TRSA without communicating with Air Traffic
Control (ATC), while in the ARSA ATC service is mandatory. This report
contains an analysis of data gathered both before and after the
implementation of the ARSA at two lead sites. The analysis concludes
that the ARSA produces a significant reduction in a collision risk at a
moderate increase in controller workload with no significant impact on
ATC service to the pilots.

AN (1) AD-A148 111/XAG

FG (2) 010300

010500

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

**TI (6) Test of Dispersal of Turbojet Aircraft Departure Tracks at Washington
National Airport (1983-84). Volume 1. Summary Report.**

DN (9) Rept. for 24 Oct 83-7 Jan 84.

RD (11) Oct 1984

PG (12) 106 Pages

RC (20) Unclassified report

DE (23) *Aircraft noise, *Airports, *Jet aircraft, *Turbojet engines, *Flight
paths

Air traffic control systems, District of Columbia, Virginia, Geographic
areas, Potomac River, Communities, Local government, United States
government, Scattering, Test methods, Noise analyzers, Monitoring, Data
acquisition, Surveys

ID (25) Washington National Airport, Scatter plan test
AB (27) This report is Volume I of a two-volume set describing the analysis of aircraft noise before, during and after the test of the so-called Scatter Plan, a dispersal of flight tracks for turbojet aircraft departing from Washington National Airport. The test, conducted by the Federal Aviation Administration (FAA) at the request of the Metropolitan Washington Council of Governments, took place from October 24, 1983, through January 7, 1984. Volume I presents analysis of data collected in the course of the test. Volume II, the Technical Appendix, consists of a compilation of field sheets, survey forms, and details of the field noise measurement program and the community attitudinal survey. The purpose of this report is to present the data collected during the test for the information of and interpretation by the interested public. The report does not include conclusions or recommendations on maintaining or changing the flight paths at Washington National Airport.

AN (1) AD-A149 349/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) National Airspace System. Operational Requirements.
DN (9) Draft rept.
RD (11) Oct 1984
PG (12) 210 Pages
RC (20) Unclassified report
DE (23) Requirements, Modification, Air traffic control systems
ID (25) National Airspace System, National, Modernization
AB (27) The National Airspace System (NAS) Plan for Facilities, Equipment and Associated Development has set a framework for the modernization of the NAS for the next decade. It was developed with specific overall goals in a mind. These include the replacement and modernization of an aging air traffic control and navigation system, the development of a total system related to the specific needs of the user community, and the design of that system to serve as a basis for further enhancement of safety, improved efficiency, and reduced operation costs. The primary objective of this document is to provide a comprehensive and accurate representation of the requirements of the entire aviation community, while accommodating modifications or new requirements in response to changing operational needs during the NAS evolution. It is not a stand alone document, but one that is support by a myriad of other documents and specifications.

AN (1) AD-A149 512/XAG
FG (2) 010500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Closely Spaced Independent Parallel Runway Simulation.
DN (9) Final rept.
AU (10) Buckanin, D. L.
Guishard, R. C.
Paul, L. E.
RD (11) Oct 1984
PG (12) 72 Pages
RS (14) DOT/FAA/CT-84/45
RC (20) Unclassified report
DE (23) *Runways, *Air traffic control systems
Utilization, Aircraft, Dual mode, Airport radar systems, Air traffic controllers, Operation, Parallel orientation, Separation, Simulation, Control centers
AB (27) As an outgrowth of the recommendations of the Industry Task Force on Airport Capacity and Delay Reduction, a simulation of closely spaced independent parallel runway operations under instrument meteorological conditions was conducted at the National Aviation System (NAS) Simulation Support Facility (NSSF) of the Federal Aviation Administration Technical Center. The simulation was conducted to determine (1) the impact of reduced runway spacings on the air traffic controller's ability to detect and resolve potential conflicts, and (2) the surveillance sensor accuracy and update rates needed to support closer runway separation. The NSSF environment was configured to simulate a terminal radar control room conducting independent parallel runway operations. Sixteen full-performance-level field controllers with monitor controller experience participated in the simulation as monitor controllers; final and local control positions were manned by Technical Center controllers. Six experimental conditions were simulated involving 48 1-hour data gathering experimental runs conducted over a 4-week period. Results indicated safe operations can be conducted at 3,400 feet runway separation provided a surveillance radar of at least a 2-second update rate and 2-milliradian accuracy is used. Some increase in penetrations of the no transgression zone will likely result from this reduction. (Author).

AN (1) AD-A149 522/XAG
FG (2) 010500
010600

081100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Recurring rept. 1 Jan-30 Jun 84.

RD (11) 11 Oct 1984

PG (12) 19 Pages

RS (14) DOT/FAA/ACS-84-1(20)

RC (20) Unclassified report

DE (23) *Security, *Aircraft hijacking

Civil aviation, Passenger aircraft, Passengers, Inspection, Guns, Explosives, Detection, Deterrence, Statistical data

AB (27) This report provides details on the effectiveness of security screening of passengers and all property intended to be carried out in the aircraft cabin in the air transportation or intrastate air transportation. It also provides a statistical summary of aircraft hijackings and alleged violations of Federal Aviation regulations pertaining to security screening.

AN (1) AD-A157 619/XAG

FG (2) 040100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) User's Manual for AC-20-53A Protection of Airplane Fuel Systems against Fuel Vapor Ignition due to Lightning

AU (10) Rasch,N.

RD (11) Oct 1984

PG (12) 72 Pages

RS (14) DOT/FAA/CT-83/3

RC (20) Unclassified report

DE (23) *FUEL SYSTEMS, *LIGHTNING

ADVERSE CONDITIONS, AIRCRAFT, USER MANUALS, AIRCRAFT, ATMOSPHERIC ELECTRICITY, PROTECTION, FUELS, IGNITION, VAPORS, AIRCRAFT,

PROTECTION,

AVIATION FUELS, ELECTICAL CORONA, AVIATION SAFETY

ID (25) Lightning protection, Swept strokes, Streamering

AB (27) This manual provides users of AC 20-53A, Protection of Aircraft Fuel Systems Against Fuel Vapor Ignition Due to Lightning, with information on the subject of fuel system lightning protection and methods of compliance of aircraft design with the Federal Aviation Regulations 23.954 and 25.954. The manual is the result of a 3-year effort

requested by the FAA Technical Center of the SAE-AE4L committee which is comprised of experts in the field of lightning research and protection of aircraft and systems from the adverse effects associated with atmospheric electricity. Keywords: Lightning; Action integral; Swept stroke; Streamering; and Corona.

AN (1) AD-A147 852/XAG

FG (2) 210500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A Study of Bird Ingestions Into Large High Bypass Ratio Turbine Aircraft Engines.

DN (9) Final rept. May 81-Jun 83

AU (10) Frings,G.

RD (11) Sep 1984

PG (12) 153 Pages

RS (14) DOT/FAA/CT-84/13

RC (20) Unclassified report

DE (23) *Ingestion(Engines), *Bird strikes

Aviation accidents, High bypass turbofans, Jet transport aircraft, Damage assessment, Commercial aircraft, Fan blades, Birds, Weight, Data bases, Statistical data

AB (27) From May 1981 to June 1983, the Federal Aviation Administration (FAA) technical Center conducted a detailed study of bird ingestions into large high bypass ratio turbine aircraft engines. The worldwide study covered over 2.7 million operations by 1,513 aircraft consisting of the DC8, DC10, B747, B757, B767, A300, A310, and L1011. The objective of this study was to determine the numbers, weights, and species of birds being ingested into these engines and determine what engine damage, if any, resulted. This report presents the findings of this study.
(Author)

AN (1) AD-A148 172/XAG

FG (2) 010301

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Measurement Flight Test for Boeing Vertol 234/CH 47-D Helicopter: Data/Analyses

AU (10) Newman,J. S.

Bland,T. L.

Beattie,K. R.
RD (11) Sep 1984
PG (12) 195 Pages
RS (14) FAA/EE-84-7
RC (20) Unclassified report
DE (23) *Acoustic measurement, *Aircraft noise
Flight testing, Sound pressure, Acoustics, Acoustic data, Data acquisition, Determination, Helicopters, Sound transmission, Data processing, Environmental impact, Heliports, Microphones, Measurement
ID (25) CH-47 aircraft
AB (27) This report documents the results of a Federal Aviation Administration (FAA) noise measurement flight test program with the Boeing-Vertol CH-47D helicopter. The report contains documentary sections describing the acoustical characteristics of the subject helicopter and provides analyses and discussions addressing topics ranging from acoustical propagation to environmental impact of helicopter noise. This test program was designed to address a series of objectives including: (1) acquisition of acoustical data for use in assessing heliport environment impact, (2) documentation of directivity characteristics for static operations of helicopters, (3) establishment of ground-to-ground and air-to-ground acoustical propagation relationships for helicopters, (4) determination of noise event duration influences on energy dose acoustical metrics, (5) examination of the differences between noise measured by a surface mounted microphone and a microphone mounted at a height of four feet (1.2 meters), and (6) documentation of noise levels acquired using international helicopter noise certification test procedures.

AN (1) AD-A148 496/XAG

**FG (2) 010301
200100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Measurement Flight Test: Data/Analyses Aerospatiale AS 350D AStar Helicopter

AU (10) Newman,J. S.
Rickleby,E. J.
Beattie,K. R.
Bland,T. L.

RD (11) Sep 1984
PG (12) 175 Pages
RS (14) FAA/EE-84-05

RC (20) Unclassified report

DE (23) *Acoustic measurement, *Aircraft noise, *Helicopters, *Flight testing
Noise reduction, Acoustic properties, Air to surface, Surface to surface, Sound transmission, Data processing, Level(Quantity), Environmental impact, Heliports, Statics, Microphones

AB (27) This report documents the results of a Federal Aviation Administration (FAA) noise measurement flight test program with the AStar helicopter. The report contains documentary sections describing the acoustical characteristics of the subject helicopter and provides analyses and discussions addressing topics ranging from acoustical propagation to environmental impact of helicopter noise. This program was designed to address a series of objectives including: (1) acquisition of acoustical data for use in assessing heliport environmental impact, (2) documentation of directivity characteristics for static operation of helicopters, (3) establishment of ground-to-ground and air-to-ground acoustical propagation relationships for helicopters, (4) determination of noise event duration influences on energy dose acoustical metrics, (5) examination of the differences between noise measured by a surface mounted microphone and a microphone mounted at a height of four feet (1.2 meters), and (6) documentation of noise levels acquired using international helicopter noise certification test procedures.

AN (1) AD-A148 525/XAG

**FG (2) 010301
170100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Measurement Flight Test: Data/Analyses, Sikorsky S-76A Helicopter

AU (10) Newman,J. S.
Rickleby,E. J.
Bland,T. L.
Beattie,K. R.

RD (11) Sep 1984
PG (12) 190 Pages
RS (14) FAA/EE-84-6
RC (20) Unclassified report

DE (23) *Aircraft noise, *Helicopters, *Flight testing, *Acoustic measurement
Sound transmission, Air to surface, Acoustic data, Data acquisition, Data processing, Environmental impact, International airports

ID (25) S-76A aircraft

AB (27) This report documents the results of a FAA noise measurement flight test program with the Sikorsky S-76 helicopter. It contains documentary

sections describing the acoustical characteristics of the subject helicopter and provides analyses and discussions addressing topics ranging from acoustic propagation to environmental impact of helicopter noise. This report is the sixth in a series of seven documenting the FAA helicopter noise measurement program conducted at Dulles International Airport during the summer of 1983. The S-76 test program involved the acquisition of detailed acoustic, position and meteorological data. This test program was designed to address a series of objectives including: (1) acquisition of acoustic data for use in assessing heliport environmental impact; (2) documentation of directivity characteristics for static operation of helicopters; (3) establishment of ground-to-ground and air-to-ground acoustic propagation relationships for helicopters; (4) determination of noise event duration influences on energy dose acoustical metrics; (5) examination of the differences between noise measured by a surface-mounted microphone and a microphone mounted at a height of four feet; and (6) documentation of noise levels acquired using international helicopter noise certification test procedures.

AN (1) AD-A153 463/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Automated Weather Observing System (AWOS) Demonstration Program.

DN (9) Final rept. Sep 83-Jun 84

AU (10) O'Brien,P. J.

Barab,J. D.

Law,F. W.

Talotta,J. D.

Waldmann,E. R.

RD (11) Sep 1984

PG (12) 251 Pages

RS (14) DOT/FAA/CT-84/20

RN (18) DOT/FAA/PM-85/1

RC (20) Unclassified report

DE (23) *WEATHER STATIONS

AUTOMATIC, UNMANNED, ATMOSPHERIC PRECIPITATION, RADIO

BROADCASTING,

SURFACE TO AIR, ACCESS, ALASKA, BAROMETRIC PRESSURE, CLOUDS, DETECTORS,

DEW POINT, FAILURE, HEIGHT, MAINTENANCE PERSONNEL, PILOTS,

PRECIPITATION, QUESTIONNAIRES, RECORDS, RESPONSE, TELEPHONE

SYSTEMS,

UNITED STATES, USER NEEDS, VERY HIGH FREQUENCY, VISIBILITY, VOICE COMMUNICATIONS, WEATHER, WIND DIRECTION, WIND VELOCITY
ID (25) AWOS(Automated Weather Observing System)

AB (27) An operational demonstration of the Automated Weather Observing System (AWOS) was conducted at 14 airport installations in the contiguous United States and Alaska. The AWOS demonstration units employed were procured from two system manufacturers, WeatherMeasure and Artais, and consisted of commercially available equipment including sensors, processors, and auxiliary hardware. The sensors were used to detect and measure nine atmospheric parameters: cloud height, visibility, wind speed, wind direction, barometric pressure, temperature, dew point, precipitation occurrence, and precipitation amount. These data were then digitized, processed, synthesized into voice messages, and updated each minute. Access to the voice message by pilots in flight was accomplished by very high frequency (VHF) omnidirectional range (VOR) or discrete VHF, and for preflight purposes, by telephone access. This report discusses the analyses and provides results and conclusions derived from AWOS demonstration source data collected during the period September 1983 through June 1984. Source data included pilot questionnaire user response, maintenance personnel failure logs, hourly AWOS observations, and official observations when available. It was concluded that, in general, the performance of the system and all sensors at the 14 field sites was acceptable except for the ceilometer and precipitation sensors.

AN (1) AD-A154 318/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Air Traffic Activity. Fiscal Year 1984.

DN (9) Statistical rept. 1 Oct 83-30 Sep 84

AU (10) Trembley,N.

RD (11) 30 Sep 1984

PG (12) 220 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC

CONTROL CENTERS, FLIGHT, INTERNATIONAL, STATIONS, STATISTICAL DATA, TRAFFIC, AIR TRAFFIC CONTROL SYSTEMS, AIRPORT CONTROL TOWERS, INTERNATIONAL AIRPORTS, ROUTING

AB (27) This report furnishes terminal and en route air traffic activity information (Statistical data) of the National Airspace System, FY

1984. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCS), Flight Service Stations (FSSs), International Flight Service Stations (IFSSs), and Approach Control Facilities.

AN (1) AD-A156 834/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR FOR AIRPORTS

TI (6) Report of Accomplishments under the Airport Improvement Program.

DN (9) Annual rept. no. 3 for period ending 30 Sep 84

AU (10) Martin, V. J.

RD (11) 30 Sep 1984

PG (12) 125 Pages

RS (14) FAA-ARP-85-1, FAA-ARP-11

RC (20) Unclassified report

DE (23) *AIRPORTS

GRANTS, AIR TRANSPORTATION, CONGRESS, REPORTS

ID (25) Grants in aid, Airport improvement program

AB (27) Section 521 of the Airport and Airway Improvement Act of 1982 (Public Law 97-248) requires that the Secretary of Transportation submit an annual report to Congress describing the accomplishments of the airport grant program. This report covers activities for the fiscal year ending September 30, 1984. Additional keywords: Approximations; Grants in aid. (Author)

AN (1) AD-A147 497/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Measurement Flight Test: Data/Analyses Aerospatiale AS 355F TwinStar Helicopter

AU (10) Newman, J. S.

Rickley, E. J.

Beattie, K. R.

Bland, T. L.

RD (11) Aug 1984

PG (12) 101 Pages

RS (14) DOT/FAA/EE-84-04

RC (20) Unclassified report

DE (23) *Aircraft noise

Acoustic measurement, Sound transmission

ID (25) AS-355F aircraft

AB (27) This report documents the results of a Federal Aviation Administration (FAA) noise measurement flight test program with the TwinStar twin-jet helicopter. The report contains documentary sections describing the acoustical characteristics of the subject helicopter and provides analyses and discussions addressing topics ranging from acoustical propagation to environmental impact of helicopter noise. This test program was designed to address a series of objectives including: (1) acquisition of acoustical data for use in assessing heliport environmental impact, (2) documentation of directivity characteristics for static operation of helicopters, (3) establishment of ground-to-ground and air-to-ground acoustical propagation relationships for helicopters, (4) determination of noise event duration influences on energy dose acoustical metrics, (5) examination of the differences between noise measured by a surface mounted microphone and a microphone mounted at a height of four feet (1.2 meters), and (6) documentation of noise levels acquired using international helicopter noise certification test procedures.

AN (1) AD-A147 765/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Selection of Air Traffic Controllers

AU (10) Sells, S. G.

Dailey, J. T.

Pickrel, E. W.

RD (11) Aug 1984

PG (12) 619 Pages

RS (14) FAA-AM-84-2

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Personnel selection

Performance (Human), Aptitude tests, Measurement, Proficiency, Job analysis

AB (27) An encyclopedic report on air traffic controller selection research. Eighteen contributors have prepared twenty-five chapters encompassing research over the past 40 years. A historical review of controller selection research includes an international overview, U.S. research from 1941 to 19663, contributions of the Civil Aeromedical Institute and the Office of Aviation Medicine, and adjustments following the

PATCO strike. A section on job analysis and characteristics of air traffic controllers is followed by six chapters on measurement of air traffic controller performance. These include Terminal, Enroute, and Flight Service Station training program assessment, controller skills tests, dynamic paper-and-pencil simulations for proficiency measurement, and criterion measurement in selection research. Research leading to the FAA's 1981 ATC selection tests includes chapters on development of the new Multiplex Controller Aptitude Test and Occupational Knowledge Test, personality assessment of ATC applicants, studies from 1972 through 1978 to validate the new selection tests, conformity of the new experimental battery to the Uniform Guidelines on Employee Selection Requirements, and recommendations for adoption of the new battery and further research. An overview of projected developments in ATC systems technology from now to the year 2000 is used to project changes that will occur in the air traffic controller's future role and function.

AN (1) AD-A148 078/XAG

FG (2) 050600

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Efforts to Improve Aviation Medical Examiner Performance through Continuing Medical Education and Annual Performance Reports

AU (10) Dille, J. R.

Harris, J. L.

RD (11) Aug 1984

PG (12) 10 Pages

RS (14) FAA-AM-84-7

RC (20) Unclassified report

DE (23) *Medicine, *Education, *Aerospace medicine, *Flight surgeons Skills, Medical examination, Training, Performance(Human), Ratings

ID (25) *Aviation medical examiner, Aeromedical certification

AB (27) Continuing medical education (CME) serves to maintain or increase the knowledge, interpretive proficiencies, and technical skills that a physician uses in his/her practice of medicine. Resulting improvement in professional performance is frequently difficult to measure, particularly in aerospace medicine, but CME is required for relicensure and/or or medical society membership in 70% of states. The Civil Aeromedical Institute first received American Medical Association approval for Category I CME credit for attendance at FAA seminars in January 1973. We began preparing 21-item annual performance reports for

each aviation medical examiner (AME) in 1979 to attempt to isolate the causes of, and to reduce, computer rejection of about one-fourth of all medical certification input because of omissions or procedural errors. There was little improvement in error rate through 1982. We are presently conducting special sessions and open-book tests for new AME's, lecturing to military flight surgeons, and encouraging Regional Flight Surgeons to review reports of physical examinations from new and frequent-error AME's.

AN (1) AD-A148 325/XAG

FG (2) 050900

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Health Examination Findings among Active Civil Airmen

AU (10) Booze, C. F., Jr

RD (11) Aug 1984

PG (12) 13 Pages

RS (14) FAA-AM-84-8

RC (20) Unclassified report

DE (23) *Medical examination, *Pilots, *Aviation safety

Health, Aviation medicine, Pathology, Epidemiology, Cardiovascular diseases, Hypertension, Eye diseases, Visual aids, Abdomen, Regulations, Civilian personnel, Air Force personnel

ID (25) Medical Certification

AB (27) It has been the policy of the Federal Aviation Administration to medically certify individuals, for a variety of flying privileges, who have a medical deficiency or disease, provided it can be determined that such action does not compromise air safety. During recent years, for example, standards have been relaxed with respect to contact lens use and medication allowed for control of hypertension. This descriptive epidemiologic study presents the point prevalence of pathology among active airmen as of January 1, 1984. Data were obtained from active computer files maintained by the Aeromedical Certification Branch of the Civil Aeromedical Institute in connection with the certification program. Cardiovascular, eye, and abdominal pathologies represent the most prevalent medical conditions among active airmen (5.9 percent, 4.4 percent, and 4.0 percent respectively). Hypertension is the most frequently occurring cardiovascular condition. Of particular interest is the current certification of 263 airmen who have undergone coronary artery bypass. Some 324,986 active airmen (45 percent) require correction for some visual deficiency. Of this total,

20,355 are contact lens wearers. History of kidney stones is the most common genitourinary/abdominal finding. Prevalence of pathology among active civil airmen, while still considerably less than among the general population, is increasing due to current and past emphasis on relaxation of regulatory requirements when consistent with safety.

AN (1) AD-A149 454/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Medically Disqualified Airline Pilots

AU (10) Dark, S. J.

RD (11) Aug 1984

PG (12) 20 Pages

RS (14) FAA-AM-84-9

RC (20) Unclassified report

DE (23) *Pilots, *Cardiovascular diseases

Qualifications, Standards, Commercial aviation, Cardiovascular system, High rate, Records

ID (25) Disqualification

AB (27) Observations on the airline pilot group probably come as close to a true reflection of incidence of disqualifying disease as is possible to observe. Prescreening by airline companies before employment and the FAA's requirements for issuance of a first-class medical certificate result in this group's being essentially purged of a disease prevalence that contributes to higher rates for other groups. These individuals are also less likely to voluntarily remove themselves from followup observations for known medical conditions that could preclude FAA medical certification. This study examined medical records of airline pilots medically disqualified by the FAA over a 220-year period. Date of birth, employer, date of disqualification, and reason for disqualification were recorded for each pilot. The data represent the final action taken on each pilot for a particular examination. During this period, 842 airline pilots were medically disqualified.

Cardiovascular diseases represent the highest cause for denial, with age being a major factor in the incidence of cardiovascular disease.

Denials for cardiovascular reasons account for 50% of all denials in this group. FAA medical certificate denial is minimal before age 45 but increases rapidly thereafter, with cardiovascular diseases responsible for more than half of this dramatic rise in incidence of disease.

Maintenance of high standards of safety requires close cardiovascular supervision as pilots grow older.

AN (1) AD-A145 933/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Area Equivalent Method on LOTUS 1-2-3TM.

DN (9) User's guide

AU (10) Warren, D. G.

RD (11) Jul 1984

PG (12) 32 Pages

RS (14) FAA-EE-84-12

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-EE-84-8, AD-A141 430.

DE (23) *Noise pollution

Day, Night, Noise, Minicomputers, Airports, Land areas, Mathematical analysis, Acoustic fields, Adverse conditions, Jet engine noise, Programmed instruction, Computer applications

ID (25) AEM(Area Equivalent Method), Noise level

AB (27) The Area Equivalent Method (AEM) is a mathematical procedure that provides the noise contour area of a specific airport given the types of aircraft and the number of operations for each aircraft. The noise contour area is a measure of the size of the land mass enclosed within a level of noise as produced by a given set of aircraft operations. The noise contour metric is the Day Night Average Sound Level (DNL) which provides a single quantitative rating of a noise level over a 24-hour period. This rating involves a 10 decibel penalty to aircraft operations during nighttime (between 10pm and 7am) to account for the increased annoyance in the community. This document contains instructions to execute AEM. The AEM requires the LOTUS 1-2-3 software package and an IBM personal computer or a calculator. The AEM is easy to use and is intended as a screening procedure to determine the need for an airport Environmental Impact Statement (EIS). This document is the second in a series of reports on the AEM. The first report was AD-A141 430.

AN (1) AD-B225 676/XAG

FG (2) 010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Helicopter IFR Lighting and Marking Preliminary Test Results.

DN (9) Technical note
AU (10) Jones, Paul
RD (11) Jul 1984
PG (12) 21 Pages
RS (14) DOT/FAA/CT-TN84-34
RN (18) XH-XD
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *APPROACH LIGHTS, *HELIPORTS
CONFIGURATIONS, LIGHTING EQUIPMENT, INSTRUMENT FLIGHT
ID (25) VISUAL GUIDANCE, ENHANCED PAD PERIMETER, WING BARS
DL (33) 12

AN (1) AD-A144 218/XAG

FG (2) 120600

250200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Operational Requirements for the Remote Maintenance Monitoring System (RMMS).

DN (9) National airspace systems configuration management document.

RD (11) Jun 1984

PG (12) 16 Pages

RS (14) FAA-NAS-MD-792

RC (20) Unclassified report

DE (23) *Monitoring, *Communications networks, *Remote control, *Requirements, *Information processing

Performance(Engineering), Diagnostic equipment, Maintenance, Data processing terminals, Data acquisition, Interfaces, Operation, Systems engineering, Training, Operators(Personnel), Air traffic controllers, Security

ID (25) *RMMS(Remote Maintenance Monitoring System), *MPS(Maintenance Processor Subsystems), RMS(Remote Monitoring Subsystem), Alarms

AB (27) This operational requirements document was prepared for use in support of the development and implementation of a Remote Maintenance Monitoring System (RMMS) for the National Airspace System (NAS). Fundamental concepts of RMMS operation and the system description have been previously developed by the Airway Facilities Service (AAF). The information generated by the Remote Monitoring Subsystem (RMS) at the equipment site shall be directly available to the responsible maintenance personnel at their work center. Initially, a Maintenance Processor Subsystem (MPS) will be installed at the ARTCC where communications lines with enroute equipment and major airports presently exist. Future MPSs shall be located at sector offices, or

major workcenters. The MPS shall monitor the status of all equipment for a specific geographical area and shall automatically notify the monitoring facilities of the equipment alarms. The monitoring facility shall be alerted of an alarm by both visual and aural signals describing where alarm has occurred, the type of alarm, and which equipment is alarming. The MPS shall serve as the primary collection point, processor, and distribution center for all RMM and Maintenance Management System (MMS) data. The RMMS will remote many routine maintenance functions currently performed at the remote equipment sites and will permit them to be accomplished at any suitably equipped work center.

AN (1) AD-A145 461/XAG

FG (2) 010300

110900

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Quasi-Steady Analysis of Aircraft Panel Flammability.

DN (9) Final rept. Apr 83-Apr 84

AU (10) Eklund, T. I.

RD (11) Jun 1984

PG (12) 32 Pages

RS (14) DOT/FAA/CT-84/14

RC (20) Unclassified report

DE (23) *Aircraft panels

Flammability, Polymers, Pyrolysis, Honeycomb structures, Ignition

AB (27) The purpose of this analysis is the development of a model that relates polymeric material properties to ignitability. The model is developed for an idealized fire test for ignitability of large-scale aircraft honeycomb panels in a vertical orientation. Transport relations for radiative heat transmission and turbulent mass and energy transfer are applied to an idealized piloted ignition of a vertical aircraft panel. The incident radiative energy required for panel ignition is related to thermal decomposition temperatures from thermogravimetric analysis. Effects of pyrolysis energy requirements and temperature dependence of flammability lean limits are incorporated in the analysis. The analysis is quasi-steady, in that transient effects are ignored and a slow ramp heating of the panel is assumed. State-of-the-art panel materials are dominated by radiative effects at the point of ignition. The analysis demonstrates that higher polymer degradation temperatures result in improved fireworthiness, that surface emissivities and reflectivities are the dominant factors controlling the incident radiation needed for

ignition, and that the heat of pyrolysis becomes less significant in the energy balance as the polymer degradation temperature is raised.

AN (1) AD-A147 892/XAG

FG (2) 050600
050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Studies of Poststrike Air Traffic Control Specialist Trainees. I. Age, Biographic Factors, and Selection Test Performance Related to Academy Training Success

AU (10) VanDeventer, A. D.

Collins, W. E.
Manning, C. A.
Taylor, D. K.
Baxter, N. E.

RD (11) Jun 1984

PG (12) 24 Pages

RS (14) FAA-AM-84-6

RN (18) FAA-AM-84-6

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *AIR TRAFFIC CONTROLLERS, *APTITUDE TESTS, *SELECTION

JOB TRAINING, PROFILES, BIOGRAPHIES, TRAINEES

ID (25) Multiplex controller aptitude test, LPN-FAA-AM-C-83/84-PSY-95, LPN-FAA-C-83/84-PSY-92

AB (27) The August 1981 strike of air traffic control specialists (ATCS's) and their subsequent firing led to the air traffic strike recovery program, which included the unprecedented hiring and basic training of over 8,000 ATCS applicants in a 2-year period. A new selection procedure was also implemented which included a job-related aptitude test (Multiplex Controller Aptitude Test) and a test to determine the level of prior knowledge of ATCS procedures (ATC Occupational Knowledge Test) for assigning extra rating points in the selection rating process. This report presents three studies that provide comparisons of prestrike and poststrike characteristics of ATCS trainees. Results indicate that: (1) Academy pass rates for the poststrike selection procedure were higher for all rating ranges; the overall pass rate for those selected from the new procedure was 63 percent vs. 56 percent from the old procedure. (2) There was a linear relationship between age at entry and pass/fail status at the end of initial screening; overall pass rates were higher for those within 'aviation experience' categories than for those in a

'no experience' group, but a similar decline in performance with age was evident. (3) Since the strike, the biographic composition of the population applying for positions as ATCS's has changed; e.g., two-thirds of the poststrike applicants have no prior experience in aviation.

AN (1) AD-A148 104/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Tolerance Endpoint for Evaluating the Effects of Heat Stress in Dogs

AU (10) Hanneman, G. D.

Sershon, J. L.

RD (11) Jun 1984

PG (12) 25 Pages

RS (14) FAA-AM-84-5

RC (20) Unclassified report

DE (23) *Heat stress(Physiology), *Heat tolerance, *Tolerances(Physiology), *Dogs

Air transportation, Physiological effects, Heart rate, Respiration, Rates, Body temperature, Humidity, Shipping, Containers

AB (27) Animals occasionally die from heat stress encountered during shipment in the nation's transportation systems. To provide a basis for a series of studies on shipping crates, environmental conditions, etc., as may be encountered in air transport of dogs, we sought to establish a suitable tolerance endpoint for heat/humidity stress in dogs. We monitored the heart rate, respiratory/panting rate, and rectal temperature of 10 male beagle dogs exposed to an air temperature of 95 + or - 1 F (relative humidity 93 + or - 2 percent) for less than 24 hours. Of the first six animals, two died during exposure, two died after being removed from the test chamber, and two survived a 24-hour exposure. Based on observations from these six dogs, a rectal temperature of 108 F was tentatively chosen as the tolerance endpoint for subsequent tests. Of four additional animals tested, two were removed from the environmental chamber when their rectal temperature reached 108 F and the two others finished the test with a rectal temperature not exceeding 102.7 F. No ill effects were noted in any of the surviving six animals during a 7-day post-observation period. These and subsequent findings indicate a rectal temperature of 108 F can be safely tolerated and can serve as a tolerance limit for additional studies of heat and humidity effects on dogs.

AN (1) AD-A142 457/XAG

FG (2) 010400

050600

120300

120600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Measurement of Pilot Performance: A Master-Journeyman Approach.

DN (9) Final rept.

AU (10) Stein, E. S.

RD (11) May 1984

PG (12) 113 Pages

RS (14) DOT/FAA/CT-83/15

RC (20) Unclassified report

DE (23) *Flight simulators, *Pilots, *Performance(Human)

Measurement, Ratings, Computers, Data acquisition, Workload, Flight crews, Cockpits, Inflight, Instructions, Reliability, Questionnaires, Analysis of variance, Correlation

ID (25) *APM(Automated Performance Measurement), PPI(Pilot Performance Index), LPN-FAA-161-301-150

AB (27) This project evaluated several methods for measuring pilot performance in a general aviation simulator and examined the relationship between performance and workload. An Automated Performance Measurement (APM) System was designed for use in a flight simulator which was instrumented for digital data collection. Performance rating was accomplished by three independent observers. Workload was assessed using a real-time subjective input system with which pilots provided workload estimates every minute. Two groups of pilots participated in the experiment: ten professional high-time pilots and ten recently qualified instrument pilots. Both the APM and the observer ratings showed significant performance differences between the two pilot groups. The automated technique showed more of a spread, however, among individuals in the professional (masters) group. The newly qualified pilots (journeymen) reported significantly higher workload than their masters counterparts and their performance was significantly worse. (Author)

AN (1) AD-A143 263/XAG

FG (2) 010305

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of an Improved Flame Resistant Aircraft Window System.

DN (9) Final technical rept.

AU (10) Geyer, G. B.

Urban, C. H.

RD (11) May 1984

PG (12) 63 Pages

RS (14) DOT/FAA/CT-83/10

RC (20) Unclassified report

DE (23) *Windows, *Transport aircraft, *Fire resistance

Test and evaluation, Test methods, Acrylic resins, Jet engine fuels, Aircraft fires, Flammability, Silicones, Rubber, Gaskets, Thermal stability, Mechanical properties, Fuselages, Aircraft panels, Honeycomb structures, Aircraft cabins

ID (25) C-10 aircraft

AB (27) Information was obtained by conducting a series of representative fire modeling experiments of aircraft cabin window systems employing salvaged segments of a McDonnell Douglas DC-10 aircraft. Experiments were performed in which a thermally improved window system was installed adjacent to a standard window configuration and exposed to flame impingement from a JP-4 fuel fire. The results of test 1 indicated that the thermally improved Dc-10 window configuration, employing the stretched acrylic pressure pane and the new EX 112 fail-safe pane, provided an overall improvement in flame resistivity over the standard all acrylic window system of at least 79 seconds (1.3 minutes). During this experiment, the silicone rubber window gasket provided adequate thermal and mechanical stability toward preventing flame penetration into the cabin through the improved fail-safe (EX 112) window system for 225 seconds (3.75 minutes), which was the duration of fire exposure. The average failure time of the stretched acrylic and thermally improved (EX 112) fail-safe window panes in tests 2, 3, and 4 was 198 seconds (3.3 minutes) and 249 seconds (4.15 minutes), respectively, after fuel ignition. These data indicated that, on average, an improvement in fire resistivity of 51 seconds (0.85 minute) was obtained by the improved (EX 112) window configuration over the standard stretched acrylic window system.

AN (1) AD-A144 332/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Modernization of the U.S. National Airspace System. Foundation for the Future.

RD (11) May 1984

PG (12) 36 Pages

RC (20) Unclassified report
DE (23) *Air traffic control systems
Aviation safety, Aeronautics, United States Government, Air Space, User needs, Planning, Cost effectiveness, Training, Avionics, Terminal flight facilities
ID (25) National Air Space System, Modernization, General aviation
AB (27) The United States, with a large and complex aviation system, has embarked on a major program to provide safer, better and more efficient Federal services to the aircraft operators who use the U.S. National Airspace System. The effort also will reduce costs of operations and raise the productivity of the Federal Government. This booklet describes in brief and understandable form the nature of the modernization and the major elements of system improvement.

AN (1) AD-A146 520/XAG

FG (2) 040200
120500
220200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Weather Satellite Products in the Flight Service Automation System (FSAS).

DN (9) Final rept. Jun 80-Aug 81

AU (10) Henline, J.

RD (11) May 1984

PG (12) 69 Pages

RS (14) DOT/FAA/CT-83/12

RN (18) DOT/FAA/PM-83/15

RC (20) Unclassified report

NO (21) Errata sheet inserted.

DE (23) *Automation, *Data displays, *Meteorological satellites
Computer programs, Man machine systems, Operational effectiveness, Optical images, Weather communications, Test beds

ID (25) FSAS (Flight Service Automation System)

AB (27) The activity discussed in this report was conducted to determine the acceptability and operational effectiveness of various techniques for displaying and distributing Weather Satellite Imagery within an Automated Flight Service Station (AFSS) environment. Primary consideration was given to the effectiveness of the displayed data together with the presentation format used for evaluations and demonstrations. Second, man-machine relationships and some hardware/software aspects were tested and evaluated in both field and laboratory environments. Results from all project activity indicated

that the techniques and systems studied provided graphic data in a form suitable for use by preflight, in-flight, and en route flight advisory specialists for nearly all their briefing functions. The concept of electronic displayed data utilizing the test-bed assembled for project activity proved reliable and acceptable (though not optimal) by the specialists participating in the three evaluation phases. Conditional acceptability was found in display medium and size, graphical quality and information presentation, and for the associated software programs for accessing the data through the test-bed installations. Additionally, the animation (i.e., movie looping) was the most desired feature of the test-bed system.

AN (1) AD-A148 110/XAG

FG (2) 010301
140200
200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Measurement Flight Test: Data/Analyses, Hughes 500 D/E Helicopter

AU (10) Newman, J. S.

Rickley, E. J.

Bland, T. L.

Beattie, K. R.

RD (11) May 1984

PG (12) 178 Pages

RS (14) FAA/EE-84-3

RC (20) Unclassified report

DE (23) *Helicopters, *Aircraft noise, *Sound transmission, *Acoustic measurement

Flight testing, Heliports, International airports, Environmental impact, Helicopter rotors, Helicopter engines, Airspeed, Altitude, Acoustic data, Meteorological data, Data acquisition, Test equipment, Test facilities, Microphones, Communications networks, Aerial photography

ID (25) *Noise measurement, Hughes 500D/E aircraft

AB (27) The report contains documentary sections describing the acoustical characteristics of the subject helicopter and provides analyses and discussions addressing topics ranging from acoustical propagation to environmental impact of helicopter noise. This report is the third in a series of seven documenting the FAA helicopter noise measurement program conducted at Dulles International Airport during the summer of 1983. The Hughes 500D/E test program involved the acquisition of

detailed acoustical, position and meteorological data. This test program was designed to address a series of objectives including: (1) acquisition of acoustical data for use in assessing heliport environmental impact, (2) documentation of directivity characteristics for static operation of helicopters, (3) establishment of ground-to-ground and air-to-ground acoustical propagation relationships for helicopters, (4) determination of noise event duration influences on energy dose acoustical metrics, (5) examination of the differences between noise measured by a surface mounted microphone and a microphone mounted at a height of four feet (1.2 meters), and (6) documentation of noise levels acquired using international helicopter noise certification test procedures.

AN (1) AD-A166 361/XAG

FG (2) 010600

050900

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) U.S. Civil Airmen Statistics: 1983.

AU (10) Carter, Patricia W.

RD (11) 31 May 1984

PG (12) 44 Pages

RS (14) FAA-AMS-420

RC (20) Unclassified report

DE (23) *MEDICAL EXAMINATION, *STATISTICAL DATA, *PILOTS, *CIVIL AVIATION TABLES(DATA), AIR TRANSPORTATION, AIR TRAFFIC CONTROLLERS, HEALTH SURVEYS, AERONAUTICS, COMMERCIAL AVIATION, ENGINEERS, FLIGHT CREWS,

HELICOPTERS, WOMEN, AIRCRAFT, OPERATORS(PERSONNEL), FLIGHT, INSTRUCTORS, NAVIGATORS, OKLAHOMA, AIR FORCE PERSONNEL, PILOTS, STATISTICS

ID (25) Certification

AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active airmen is one who hold both an airmen certificate and a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots, control tower operators,

flight navigators, flight engineers, and flight instructors. Selected tables are Active Pilot Certificates Held: December 31, 1974-1983; Active Women Pilot Certificates Held; Active Helicopter Pilots by Class of Certificates; Airline Transport Certificates Held, by Selected Age Groups.

AN (1) AD-B246 448/XAG

FG (2) 010500

010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Federal Aviation Regulations. Part 121. Certification and Operations:

Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft

RD (11) 29 May 1984

PG (12) 10 Pages

RN (18) XH-DOT/FAA

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *COMMERCIAL AVIATION

CIVIL AVIATION, OPERATORS(PERSONNEL), AVIATION SAFETY, AIR TRANSPORTATION, REGULATIONS

ID (25) FEDERAL AVIATION REGULATION PART 121, AIRPORT CERTIFICATION, COMMERCIAL

OPERATORS, FAR(FEDERAL AVIATION REGULATIONS)

DL (33) 12

AN (1) AD-P004 178/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT

STANDARDS

TI (6) Avoiding Serious Bird Strike Incidents

AU (10) Harrison, M. J.

RD (11) 25 May 1984

PG (12) 4 Pages

RC (20) Unclassified report

NO (21) This article is from 'Proceedings, Conference and Training Workshop on Wildlife Hazards to Aircraft Held at Charleston, South Carolina on 22-25 May 1984,' AD-A148 330. p9-12.

DE (23) *Bird strikes

Prevention, Hazards, Risk, Altitude, Aviation safety, Symposia

ID (25) Component Reports

AB (27) Bird hazards to aircraft can create serious inflight emergency conditions if the pilot and crew are not prepared to handle the situation. As a pilot who has experienced two serious bird strikes that resulted in emergency landings and as a biologist who has spent the last nine years working on bird hazards to aircraft, some personal observations may assist other pilots in dealing with a midair collision with birds. Some of the aspects of the bird-strike hazard are examined.

AN (1) AD-P004 185/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORT

STANDARDS

TI (6) Review of Engine Ingestions to Wide Body Transport Aircraft

AU (10) Harrison,M. J.

RD (11) 25 May 1984

PG (12) 8 Pages

RC (20) Unclassified report

NO (21) This article is from 'Proceedings, Conference and Training Workshop on Wildlife Hazards to Aircraft Held at Charleston, South Carolina on 22-25 May 1984,' AD-A148 330. p77-84.

DE (23) *Bird strikes

Transport aircraft, Hazards, Turbofan engines, Ingestion(Engines), Symposia

ID (25) Component Reports

AB (27) In January 1981, the Federal Aviation Administration's (FA) Northwest Region raised the issue of dual engine ingestion hazards to large, high bypass turbofan twin engine powered transport aircraft. The issue was whether dual engine failure was likely due to bird ingestions on twin engine aircraft equipped with high bypass turbofan engines. The Northwest Region, whose responsibility is certification of transport category aircraft, initiated a survey through air carriers worldwide, identifying damaging engine ingestions. The FAA's New England Region, who has responsibility for engine certification, initiated a review of engine ingestion data. In April 1981, an ad hoc team was formed to collect and analyze engine ingestion data. This paper presents some of the data and offers some considerations on how bird strike data should be collected and analyzed.

AN (1) AD-P004 196/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) FAA (Federal Aviation Administration) Policy Regarding Solid Waste Disposal Facilities

AU (10) Harrison,M. J.

RD (11) 25 May 1984

PG (12) 6 Pages

RC (20) Unclassified report

NO (21) This article is from 'Proceedings, Conference and Training Workshop on Wildlife Hazards to Aircraft Held at Charleston, South Carolina on 22-25 May 1984,' AD-A148 330. p213-218.

DE (23) *Airports, *Waste disposal, *Solid wastes
Aviation safety, Policies, Facilities, Symposia

ID (25) Component Reports, FAA policy

AB (27) The Federal Aviation Administration's (FAA) policy regarding solid waste disposal facilities on and near airports is based on bird strike data, accident information and aircraft performance. Distance criteria used in FAA Order 5200.5, FAA Guidance Concerning Sanitary Landfills on or Near Airports, coincides with distances specified in Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace. FAR Part 77 provides obstruction standards for use in several FAA safety programs designed to provide aircraft with proper clearance from objects.

AN (1) AD-P004 209/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) The FAA (Federal Aviation Administration) Grant-in-Aid Assurances, Far Part 139, and Airport Hazards

AU (10) Dilk,A. J.

RD (11) 25 May 1984

PG (12) 37 Pages

RC (20) Unclassified report

NO (21) This article is from 'Proceedings, Conference and Training Workshop on Wildlife Hazards to Aircraft Held at Charleston, South Carolina on 22-25 May 1984,' AD-A148 330. p331-367.

DE (23) *Aviation safety, *Airports
Hazards, Aviation accidents, Regulations, Symposia

ID (25) Component Reports

AB (27) The promises made to the FAA by airport operating authorities, which are found in grants-in-aid, or as a result of certification under 14 C.F.R. Part 139, are more than agreements for construction compliance. They can prove to be the basis of multi-million dollar lawsuits where hazards exist in the airport environment, and are found by courts to be the proximate cause of an aviation accident.

AN (1) AD-A143 023/XAG

FG (2) 010500
010600
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION
SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program.

DN (9) Recurring rept. 1 Jul-31 Dec 83.

RD (11) 13 Apr 1984

PG (12) 20 Pages

RS (14) DOT/FAA/ACS-83-2(19)

RC (20) Unclassified report

DE (23) *Civil aviation, *Security, *Reports, *Aircraft hijacking
Commercial aviation, Congress, Public safety, Passengers, Aircraft cabins, Air transportation, Aeronautics, Passenger aircraft, Sabotage

AB (27) This report details on the effectiveness of security screening of passengers and all property intended to be carried in the aircraft cabin in air transportation or intrastate air transportation. It also provides a statistical summary of aircraft hijackings and alleged violations of Federal Aviation regulations pertaining to security screening. (Author)

AN (1) AD-A143 229/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Measurement Flight Test: Data/Analyses Aerospatiale SA 365N Dauphin 2 Helicopter

AU (10) Newman, J. S.

Rickely, E. J.

Daboin, S. A.

Beattie, K. R.

RD (11) Apr 1984

PG (12) 167 Pages

RS (14) FAA-EE-84-2

RC (20) Unclassified report

DE (23) *Aircraft noise, *Helicopters, *Acoustic measurement, *Flight testing
Heliports, Noise pollution, Sound transmission, Environmental impact, Acoustic data, Meteorological data, Data acquisition, Orientation(Direction), Microphones, Sound pressure, Test methods, Standards, Data reduction

AB (27) This report documents the results of a Federal Aviation Administration (FAA) noise measurement flight test program with the Dauphin twin-jet helicopter. The report contains documentary sections describing the acoustical characteristics of the subject helicopter and provides analyses and discussions addressing topics ranging from acoustical propagation to environmental impact of helicopter noise. This report is the second in a series of seven documenting the FAA helicopter noise measurement program conducted at Dulles International Airport during the summer of 1983. The Dauphin test program involved the acquisition of detailed acoustical, position and meteorological data. This test program was designed to address a series of objectives including: (1) acquisition of acoustical data for use in assessing heliport environment impact, (2) documentation of directivity characteristics for static operation of helicopters, (3) establishment of ground-to-ground and air-to-ground acoustical propagation relationships for helicopters, (4) determination of noise event duration influences on energy dose acoustical metrics, (5) examination of the differences between noise measured by a surface mounted microphone and a microphone mounted at a height of four feet (1.2 meters), and (6) documentation of noise levels acquired using international helicopter noise certification test procedures. (Author)

AN (1) AD-A143 569/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Modified Reflex-Percussive Grooves for Runways.

DN (9) Final rept.

AU (10) Agrawal, S. K.

RD (11) Apr 1984

PG (12) 25 Pages

RS (14) DOT/FAA/CT-84/7

RN (18) DOT/FAA/PM-84/8

RC (20) Unclassified report

NO (21) See also Rept. no. DOT/FAA/RD-82/77, AD-A127 252.

DE (23) *Runways

Grooving, Edges, Surfaces, Friction, Cost effectiveness, Surface finishing

AB (27) Runway surface treatments, such as grooves, can minimize the danger of aircraft hydroplaning by reducing the water buildup on the runway and by facilitating forced water escape from tire-runway interface. Square saw-cut grooves of 1/4-inch size with spacing between 1 inch and 2 1/2 inches have been widely used, the former providing a higher resistance

to hydroplaning. Other surface treatments that have been reported as being effective in minimizing aircraft hydroplaning include porous friction overlay and reflex-percussive grooves. The latter being offered as a cost-effective alternative to square saw-cut grooves. As the title of this report suggests, the modified reflex-percussive grooves are a derivative of reflex-percussive grooves; the cutting heads for the latter were modified to produce smoother groove edges which tend to improve water flow through the groove channels. Comparative dynamic tests showed that the braking performance of an aircraft tire on modified reflex-percussive grooves is equivalent to the performance on square saw-cut grooves spaced between 1 1/4 inches and 2 inches. Results also showed that hydroplaning was not initiated up to 150 knots speed. The lower cost of the modified grooves makes them a viable cost-competitive method; however, realistic cost estimates and full-savings potential can only be affirmed after application of these grooves in an operational environment.

AN (1) AD-A144 614/XAG

**FG (2) 010500
130300**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM
ENGINEERING AND
MAINTENANCE SERVICE**

**TI (6) The Performance of Civil Airport Pavement with Lime-Cement-Flyash Base
Course.**

DN (9) Final rept.

AU (10) McLaughlin, A. L.

RD (11) Apr 1984

PG (12) 23 Pages

RS (14) DOT/FAA/PM-84/10

RC (20) Unclassified report

DE (23) *Construction, *Pavement bases

Limitations, Specifications, Cements, Airports, Civil aviation,
Pavements, Laboratory tests, Long range(Time), Safety, Calcium oxides,
Fly ash, Performance(Engineering), Stabilization, Monitoring

AB (27) The background and application of lime, cement and flyash are reviewed in order to explain the performance of civil aviation airport pavements constructed with lime-cement-flyash as a stabilizing base course. The report states that performance of these pavements has been good and that the state of the art presently provides experimental techniques and laboratory tests to assure an economic and safe design. It is observed that many of the problems are associated with environmental forces and long-term behavior of the materials. A recommendation is

that long-term performance together with the effectiveness of any remedial measures should be systematically monitored and catalogued so that any needed changes in the technology can be identified. Also, construction procedures and specifications limits can now be provided to the airport pavement engineering community on the basis of existing data and additional laboratory investigations.

AN (1) AD-A146 380/XAG

FG (2) 010300

090100

201400

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) The Effect of Aircraft Generated Electromagnetic Interference (EMI) on
Future Avionics Systems -- A Compendium.**

DN (9) Conference publication 19-21 Oct 82

AU (10) Larsen, W. E.
Rasch, N. O.

RD (11) Apr 1984

PG (12) 327 Pages

RS (14) DOT/FAA/CT-84/9

RC (20) Unclassified report

DE (23) *Electromagnetic interference, *Aircraft equipment, *Electronics,
*Avionics

Commercial equipment, Lightning, Analog systems, Electromagnetic
fields, Electrical loads, Electromagnetic environments, Near field,
Maintenance, Aircraft, Hazards, Microelectronics, Radio transmission,
Digital systems, Integrated systems, Enemy, Loads(Forces), Standards,
Sensitivity, Architecture, Circuits

ID (25) Span(Life)

AB (27) There are various commercial standards and specifications which are aimed at making aircraft compatible with a hostile electromagnetic environment. However, most of these standards and specifications were developed for analog circuitry; before the advent of high-speed flight critical digital systems. These standards must now be reengineered to accommodate the new technology of composites and sensitive integrated micro-electronic architectures. Modern aircraft are experiencing many cases of flights into or near heavy electromagnetic fields from various sources such as lightning, switching of heavy aircraft electrical loads, or radio transmissions during their life span. This EMI environment has caused and is causing hazardous incidents to aircraft by impairing the normal operation of some flight-critical and flight-essential equipment. Special precautions must also be taken to

protect this sensitive digital avionics during maintenance operations. For this reason these standards and specifications must be revised and new design, manufacturing, and testing methods introduced.

AN (1) AD-A146 645/XAG

**FG (2) 060500
061000**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Blood Pressure Levels of Active Pilots Compared with Those of Air Traffic Controllers

AU (10) Booze, C. F., Jr.
Simcox, L. S.

RD (11) Apr 1984

PG (12) 14 Pages

RS (14) FAA-AM-84-3

RC (20) Unclassified report

DE (23) *Pilots, *Air traffic controllers, *Hypertension

Aviation medicine, Stress(Physiology), Diagnosis(Medicine), Flight crews, Drugs, Policies, Personnel retention, Civilian population, Stress(Psychology), Statistical distributions, Aging(Physiology), Workload, Commercial aviation, Blood pressure, Automation, Files(Records), Dosage

ID (25) Certification(Personnel), Age distribution

AB (27) Currently some 15,212 active airmen are certified to fly with a diagnosis of hypertension. Federal Aviation Administration blood pressure standards for certification of airmen for considered to be quite liberal; however, recent FAA policy further liberalized medications and dosages allowed in certification of airmen. Since limited information is available concerning the recorded blood pressures of airmen, a systematic sample of active pilots was extracted from automated medical files maintained by the Aeromedical Certification Branch of the Civil Aeromedical Institute for descriptive purposes as well as to compare with a sample of air traffic controllers, given the continuing interest in the relationship of stress of air traffic control work. This is a pre-strike ATCS sample. Distributions of blood pressure by age were compared by using conventional nonparametric techniques for 10-year age intervals. Data were also compared with general population findings. Prevalence of hypertension is greater in the general United States population than found with any of these groups reported. Prevalence of borderline and definite hypertension is seen to increase with age for all groups

studied. Prevalence of any degree of hypertension is lower for airline pilots than the all-airmen group or the air traffic controller group. Of the three airmen groups, prevalence of hypertension is highest for the air traffic controllers, but the influence of more liberal waiver and retention criteria for air traffic controllers is an important reason for the excess.

AN (1) AD-A140 958/XAG

**FG (2) 010500
130100**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Marking and Lighting of Unpaved Runways - Inservice Testing

AU (10) Dosch, V. F.
Brown, G. S.

RD (11) Mar 1984

PG (12) 46 Pages

RS (14) DOT/FAA/CT-84/11

RC (20) Unclassified report

DE (23) *Runways, *Markers, *Marker lights, *Lighting equipment
Prototypes, Airports, Visual aids, Landing aids, Night landings, Low costs, Daylight, Utility aircraft, Test and evaluation, Standardization

ID (25) *Unpaved runways, Turf runways

AB (27) This document describes the results of inservice testing of an FAA developed unpaved runway airport marking and lighting system. Inservice testing of the prototype unpaved runway marking and lighting system was conducted at separate utility airports having essentially different environmental conditions. User participating pilots were, in general, favorably impressed with the standardized system concept. They did, however, indicate several aspects of the system that could be improved or modified. This report details results of this inservice evaluation, and provides conclusions as to desirable changes that might enhance system effectiveness.

AN (1) AD-A148 045/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Aviation-Related Cardiorespiratory Effects of Blood Donation in Female Pilots

AU (10) Lategola, M. T.

Davis,A. W., Jr.
Gilcher,R. O.
Lyne,P. J.
Burr,M. J.

RD (11) Mar 1984

PG (12) 37 Pages

RS (14) FAA/AM-84-4

RC (20) Unclassified report

DE (23) *Pilots, *Females, *Blood donors

Hypoxia, Physiological effects, Tolerances(Physiology), Oxygen,
Nitrogen, Mixtures, High altitude, Exposure(Physiology)

AB (27) Ten healthy female pilots, 20-49 years old and weighing more than 110 pounds were tested for tolerances to hypoxia orthostatic stress, and physical work at 1 and 3 d after donating about 450 mL of blood on one occasion, and 6 mL (sham control) on a second separate occasion. Testing included consecutive 30-min seated exposures to each of four oxygen-nitrogen mixtures (equal to air breathing at 6,000, 8,000, 10,000 and 12, 400 ft of altitude), 5 min of quiet standing, and seated pedal ergometry braded to produce a heart rate of 140 beats per min. The findings of this study indicated that, if the complete absence of adverse symptoms at ground level, a pilot may return to flying between 1 and 3 d after blood donation with the recommended initial precautions that: cabin altitude be limited to < 6,000 during flight; and +Gz stress exceeding the equivalent of short-duration level turns at 30 deg of bank angle be avoided. Until complete restoration of the pilot's in-flight physiological tolerances has occurred, the presence of a copilot and on-board availability of supplemental oxygen are also recommended.

AN (1) AD-A138 759/XAG

FG (2) 010600

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS

TI (6) FAA (Federal Aviation Administration) Aviation Forecasts - Fiscal Years
1984-1995

AU (10) Olson,M.

Mercer,G.

Bowles,R.

Moles,C.

Schwartz,A.

RD (11) Feb 1984

PG (12) 81 Pages

RS (14) FAA-APO-84-1

RC (20) Unclassified report

DE (23) *Air traffic, *Commercial aviation

Aircraft landings, Takeoff, Forecasting, Tables(Data), Graphs,
Statistical data

ID (25) Airlines, General aviation

AB (27) This report contains the Fiscal Years 1984-1995 Federal Aviation
Administration (FAA) forecasts of aviation activity at FAA facilities.

These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public. The overall outlook for the forecast period is for strong economic growth relatively stable real fuel prices, and moderate inflation. Based upon these assumptions, aviation activity is forecast to increase by Fiscal Year 1995 by 79 percent at towered airports (commuters, 73 percent; air carrier, 23 percent; general aviation, 101 percent; military, 0 percent), 45 percent at air route traffic control centers (commuters, 110 percent; air carriers, 25 percent; general aviation, 74 percent; military, 0 percent), and 60 percent in flight services performed. Hours flown by general aviation is forecast to increase 60 percent and helicopter hours flow 67 percent. Scheduled domestic revenue passenger miles (RPM's) are forecast to increase 81 percent, with scheduled international RPM's forecast to increase by 79 percent and commuter RPM's forecast to increase by 195 percent.

AN (1) AD-A139 906/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY

TI (6) Noise Measurement Flight Test: Data/Analyses Bell 222 Twin Jet
Helicopter

AU (10) Newman,J. S.

Rickley,E. J.

Bland,T. L.

Daboin,S. A.

RD (11) Feb 1984

PG (12) 215 Pages

RS (14) FAA-EE-84-1
RC (20) Unclassified report
DE (23) *Aircraft noise
Helicopters, Acoustic measurement, Data acquisition, Data reduction,
Sound transmission
ID (25) Bell 222 aircraft
AB (27) This report contains documentary sections describing the acoustical characteristics of the subject helicopter and provides analyses and discussions addressing topics ranging from acoustical propagation to environmental impact of helicopter noise. The report is the first in a series of seven documenting the FAA helicopter noise measurement program conducted at Dulles International Airport during the summer of 1983. The Bell 222 test program involved the acquisition of detailed acoustical, position and meteorological data. This test program was designed to address a series of objectives including: (1) evaluation of 'Fly Neighborly' (minimum noise) operating procedures for helicopters, (2) acquisition of acoustical data for use in heliport environmental impact, (3) documentation of directivity characteristics for static operation of helicopters, (4) establishment of ground-to-ground and air-to-ground acoustical propagation relationships for helicopters, (5) determination of noise event duration influences on energy dose acoustical metrics, (6) examination of the differences between noise measured by surface mounted microphone and a microphone mounted at a height of four feet (1.2 meters), and (7) documentation of noise levels acquired using international helicopter noise certification test procedures.

AN (1) AD-A140 796/XAG
FG (2) 010300
131200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Aircraft Seat Fire Blocking Layers. Effectiveness and Benefits under
Various Scenarios.
DN (9) Final rept.
AU (10) Hill, R. G.
Brown, L. J.
Speitel, L.
Johnson, G. R.
Sarkos, C.
RD (11) Feb 1984
PG (12) 165 Pages
RS (14) DOT/FAA/CT-83/43

RC (20) Unclassified report
DE (23) *Aircraft fires, *Seats, *Pads(Cushions), *Aviation safety
Urethanes, Foam, Layers, Blocking, Materials, Combustion, Scale models,
Scenarios, Fuselages, Ramps, Evacuation, Survivability, Test and
evaluation
AB (27) Full-scale tests were conducted utilizing the C133 test article located
in the Full-Scale Fire Test Facility to determine the benefits that
could be derived from fire blocking aircraft passenger seats. Various
fire scenarios were selected and tests conducted to evaluate the
effectiveness of various blocking materials. The scenarios selected
fell into three broad classifications, post-crash, inflight, and ramp
type fires. Test results indicate that the use of a fire-blocking
material could increase survivable evacuation time during a post-crash
fire that enters a fuselage through a break in the cabin, by as much as
50 percent. Tests also indicate that in-flight and ramp type fires that
could destroy the aircraft with present seating materials, could be
controlled with the use of a fire-blocking material. (Author)

AN (1) AD-A141 430/XAG
FG (2) 010300
120100
120500
120600
200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY
TI (6) Area Equivalent Method VISICALC (trade name).
DN (9) User's guide
AU (10) Connor, T. L.
Fortescue, D. N.
RD (11) Feb 1984
PG (12) 34 Pages
RS (14) FAA-EE-84-8
RC (20) Unclassified report
DE (23) *Numerical methods and procedures, *Computations, *Computer programs,
*Instructions, *Aircraft noise, *Acoustic measurement
Contours, Airports, Environmental impact statements, Sound,
Minicomputers, Calculators, Equations, Day, Night
ID (25) AEM(Area Equivalent Method), VISICALC computer program, DNL(Day Night
Average Sound Level)
AB (27) This document contains instructions to execute the Area Equivalent
Method (AEM). The AEM requires the VISICALC software package and an

Apple IIe personal computer or a calculator. The Area Equivalent Method is a mathematical process to calculate Day Night Average Sound Level contour area. The AEM is easy to use and is intended as a screening procedure to determine the need for an airport Environmental Impact Statement. (Author)

AN (1) AD-A137 657/XAG

FG (2) 010300

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Extinguisher Agent Behavior in a Ventilated Small Aircraft.

DN (9) Final rept. Mar-Apr 83

AU (10) Slusher, G. R.

Wright, J.

Demaree, J. E.

Neese, W. E.

RD (11) Jan 1984

PG (12) 57 Pages

RS (14) DOT/FAA/CT-83/30

RC (20) Unclassified report

DE (23) *Fire extinguishing agents, *Fire extinguishers, *Aircraft

Flight simulation, Dissipation, Rates, Toxicity,

Concentration(Chemistry), Dosage, Safety, Ventilation, Air flow,

Chemicals, Powders, Visibility

AB (27) Hand-held Halon 1211 fire extinguishers were evaluated in a four-place

Cessna Model 210C aircraft. The aircraft was operated in an airflow facility under simulated flight conditions. Extinguishers of 2.5 pound capacity were discharged to determine the dissipation rate and toxicity levels of Halon 1211 extinguishing agents. Agent concentrations dissipated rapidly. Analysis of dose calculations demonstrated that 2.5 pound Halon 1211 extinguishers were safe in the four-passenger test aircraft. Dose calculations for the pilot were only 25 percent of the limit for Halon 1211. Ventilation airflow produced air changes in the cabin of 1.16 minutes at 120 miles per hour airspeed and 1 minute at 140 miles per hour. The high cabin ventilation rates together with the effects of agent stratification resulted in safe conditions. The effective air change time found in analysis was of the order of one-third of a minute. This quantity used in the procedures outlined in Advisory Circular AC-20-42B leads to the conclusion that discharge of Halon 1211 weights of 6 pounds can be safely withstood in the C120 under flight conditions. Discharge of a 2.5 pound chemical powder extinguisher adversely affected visibility for over 22 seconds.

AN (1) AD-A140 409/XAG

FG (2) 010300

050200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Cabin Safety Subject Index

AU (10) Pollard, D. W.

Steen, J. A.

Biron, W. J.

Cremer, R. L.

RD (11) Jan 1984

PG (12) 17 Pages

RS (14) FAA-AM-84-1

RC (20) Unclassified report

DE (23) *Subject indexing, *Aircraft cabins, *Safety

Reports, Regulations, Circular, Numbers, Federal law, Aviation safety

ID (25) Announcement bulletins

AB (27) The most frequently used Federal Aviation Administration published cabin safety information is indexed and cross referenced. This includes Federal Aviation Regulations numbers, Air Carrier Operations Bulletin numbers, Advisory Circular numbers, and Office of Aviation Medicine report numbers. (Author)

AN (1) AD-A142 092/XAG

FG (2) 131200

140200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Study on Transport Airplane Unplanned Water Contact.

DN (9) Final rept. 1981-1982

AU (10) Johnson, D.

RD (11) Jan 1984

PG (12) 38 Pages

RS (14) DOT/FAA/CT-84/3

RC (20) Unclassified report

DE (23) *Aviation accidents, *Transport aircraft, *Crashworthiness, *Water, *Safety

Feasibility studies, Crash landing, Ditching, Survival equipment,

Evacuation, Survival(Personnel), Scenarios, Drowning, Fuselages,

Sinking, Test and evaluation, Numerical analysis, Tables(Data), Factor analysis

ID (25) Unplanned water contact

AB (27) This study provides for an identification of accident scenario(s) and associated occupant risks and survival equipment needs, relating to the inadvertent or unplanned water contact of transport category airplanes. This identification was obtained, in part, from the results of contractual studies of transport accident data. The subject study concludes that while the unplanned water contact of a transport airplane occurs less frequent than corresponding ground contact, the impact loads are often higher, leading to greater fuselage damage. Also, the unplanned water contact occurs more frequent than a planned water landing (ditching) and usually involves adverse flooding conditions. These conditions, in turn, affect the ability of occupants to retrieve, deploy and/or don on-board floatation equipment.

AN (1) AD-A144 390/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) The High Altitude Pollution Program (1976-1982).

DN (9) Final rept.

AU (10) Sundararaman,N.

RD (11) Jan 1984

PG (12) 139 Pages

RS (14) FAA/EE-84-10

RC (20) Unclassified report

DE (23) *AIR POLLUTION, *HIGH ALTITUDE

AIRCRAFT ENGINES, AIRCRAFT EXHAUST, EXHAUST GASES, CLIMATE, FIELD TESTS, CIVIL AVIATION, OZONE, DEPLETION, EMISSION, STRATOSPHERE, TROPOSPHERE, UPPER ATMOSPHERE

AB (27) The High Altitude Pollution Program (HAPP) was initiated by the Federal Aviation Administration in 1976 in order to assess the effects of aircraft engine emissions on the upper atmosphere. Its predecessor, the Climatic Impact Assessment Program (1971-1975) conducted by the U.S. Department of Transportation, focused international attention on the ozone depletion problem. This final report documents the conclusions of the studies funded by HAPP from 1976 until the program was terminated in 1982. Scientific considerations of the impacts of aircraft engine emissions on the stratosphere and troposphere are discussed. Major HAPP accomplishments in the areas of engine emissions, laboratory studies, field measurements, and modeling are summarized. Current evaluations of

the effects of aircraft engine NOx emissions (through 1984) are also contained in the report. Based upon the studies undertaken, it appears that there is no immediacy of concern with regard to ozone and climatic changes that may result from the operations of civilian aircraft at this time.

AN (1) AD-B085 019/XAG

FG (2) 010300

120100

201300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Effects of Ventilation and Panel Properties on Temperature Rise from Aircraft Fires.

DN (9) Technical note May-Nov 83

AU (10) Eklund,T. I.

RD (11) Jan 1984

PG (12) 25 Pages

RS (14) DOT/FAA/CT-TN83/63

RC (20) Unclassified report

AL (22) Distribution limited to U.S. Gov't. agencies only; 20 Aug 84. Other requests must be referred to U.S. Dept. of Transportation, Federal Aviation Admin., Technical Center, Atlantic City Airport, NJ 08405.

DE (23) *Aircraft fires, *Aircraft panels, *Honeycomb structures, *Heat transfer, *Thermal analysis
Burning rate, Fuselages, Conduction(Heat transfer), Convection(Heat transfer), Internal, Heat loss, Inflight, Mathematical models, Walls, Heat sinks, Ratios, Pyrolysis, Rates, Ventilation, Inertia, Thermal properties, Time

ID (25) Stirrer analysis, Ceiling panels

DL (33) 13

AN (1) AD-A147 392/XAG

FG (2) 010301

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Helicopter Noise Survey Performed at Las Vegas, Nevada, January 19-21, 1984

AU (10) Albersheim,S. R.

RD (11) 1984

PG (12) 49 Pages
RS (14) FAA/EE-84-15
RC (20) Unclassified report
DE (23) *Noise(Sound), *Helicopters
Environmental impact, Site selection, Nevada, Meteorological data,
Measuring instruments, Urban areas
ID (25) Las Vegas
AB (27) The FAA conducted a noise measurement survey of helicopter operations at Las Vegas during the Annual Helicopter Association International Convention. The survey was performed during the period of January 19-21, 1984. The purpose of this noise survey was to obtain additional noise data for a number of different helicopter models during normal operations in an urban environment. This survey was the first test program which measured sideline noise levels beyond 500 feet. The data collected are classified as survey type data, since the data obtained were from target of opportunity as apposed to controlled test data.

AN (1) AD-A162 626/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1984.
DN (9) Annual rept.
AU (10) Trembley, Nancy
RD (11) 1984
PG (12) 207 Pages
RC (20) Unclassified report
DE (23) *CIVIL AVIATION
AERONAUTICS, PRODUCTION, AVIATION ACCIDENTS, AIR FORCE PERSONNEL, AIRPORTS, AIR TRANSPORTATION, AIRCRAFT, DICTIONNAIRES, HANDBOOKS, FACILITIES, NATIONS, STATISTICAL DATA, EXPORTS, IMPORTS, WORKLOAD
AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production and Imports/Exports, and a Glossary of the terms used in this publication. This handbook is published annually by the Federal Aviation Administration (FAA). Its prime purpose is to serve as a convenient source for historical data and to assist in evaluating progress. This edition contains data on major civil aviation activities for the period ending December 31, 1984. Chapter I deals with the FAA and its functions. This section also includes a comparison

of the agency's appropriations from fiscal years 1981-1985, and the agency's personnel complement. National Airspace System data reflecting the fiscal and calendar year workload of the FAA air traffic facilities--terminal and en route--are contained in Chapter II. Selected statistics concerning the Nation's airport facilities are presented in Chapter III and IV by state within FAA regions. The U.S. civil air carrier fleet, as of December 31, 1984 is described in detail in Chapter V and VI and the airmen data is shown in Chapter VII. The general aviation aircraft data is presented in Chapter VIII. Aircraft accidents, both air carrier and general aviation, appear in Chapter IX.

AN (1) AD-A186 255/XAG
FG (2) 131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) National Air Transportation Inspection Program, Federal Aviation Administration, March 4 - June 5, 1984.

RD (11) 1984
PG (12) 193 Pages
RC (20) Unclassified report
DE (23) *COMMERCIAL AVIATION
AIR TRANSPORTATION, GROUND LEVEL, INDUSTRIES, INSPECTION, SAFETY, STANDARDS, SURVEILLANCE, TASK FORCES, TRANSPORTATION
AB (27) The Secretary of Transportation, in an effort to assure the continuation of adequate safety standards in the transportation industry, appointed a task force within the Department to conduct an intense safety review of all forms of transportation. The Secretary took steps to assure the continuing effectiveness of the FAA safety inspection and surveillance programs by directing the FAA to: (1) Increase the number and frequency of air carrier inspections; (2) Conduct a series of short-notice inspections into any and all safety-related areas associated with air carrier operations; (3) Conduct inspections of all segments of the industry including established and new entrant air carriers, commuters and large air carriers, flight and ground operations, and maintenance procedures and records and (4) Correct specific problems identified during the course of these inspections. The following report describes the 90-day inspection operation and discusses the results and general findings of the inspections. More detailed information about the organization, approach and inspections is included in appendices. Specific findings in the case of individual airlines have been discussed with those airlines. Where deficiencies were detected, they were addressed.

AN (1) AD-A156 247/XAG
FG (2) 010309
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft for Calendar Year 1983.

RD (11) 31 Dec 1983

PG (12) 314 Pages

RC (20) Unclassified report

DE (23) *AIRCRAFT, *CIVIL AVIATION

STATISTICAL DISTRIBUTIONS, GEOGRAPHICAL DISTRIBUTION, COMMERCIAL AIRCRAFT, PASSENGER AIRCRAFT, AIRCRAFT INDUSTRY, INVENTORY, STATISTICAL DATA, TRANSPORT AIRCRAFT

ID (25) General aviation

AB (27) This report presents information about the U.S. civil aircraft fleet.

It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner. Additional keywords:

Commercial aircraft; Transport aircraft; Passenger aircraft; Statistical data. (Author)

AN (1) AD-A135 884/XAG
FG (2) 010305
131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Structural Response of Transport Airplanes in Crash Situations.

DN (9) Final technical rept.

AU (10) Thomson, R. G.
Caiafa, C.

RD (11) Nov 1983

PG (12) 123 Pages

RS (14) DOT/FAA/CT-83/42

RN (18) NASA-TM-85654

RC (20) Unclassified report

DE (23) *Aviation accidents, *Transport aircraft, *Structural properties, *Crashworthiness, *Accident investigations

Crashes, Structural analysis, Data acquisition, Fire hazards, Casualties, Death, Reduction, Survivability, Trauma, Fuselages, Landing gear, Collapse, Fuel tanks, Rupture, Wings, Fracture(Mechanics), Engine components, Damage, Protection, Aircraft seats

AB (27) This report highlights the results of contractual studies of transport

accident data undertaken in a joint research program sponsored by the FAA and NASA. From these accident data studies it was concluded that the greatest potential for improved transport crashworthiness is in the reduction of fire related fatalities. Accident data pertaining to fuselage integrity, main landing gear collapse, fuel tank rupture, wing breaks, tearing of tank lower surfaces, and engine pod scrubbing are discussed. In those accidents where the energy absorbing protective capability of the fuselage structure is expended and the airplane experiences major structural damage, trauma caused fatalities are also discussed. The dynamic performance of current seat/restraint systems are examined but it is concluded that the accident data does not adequately define the relationship between occupant response and the dynamic interaction with the seat, floor and fuselage structure.
(Author)

AN (1) AD-A137 766/XAG
FG (2) 050300
210400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) U.S. Energy: Aviation Perspective

AU (10) Blake, C. L.

RD (11) Nov 1983

PG (12) 191 Pages

RS (14) FAA/EE-83/10

RC (20) Unclassified report

NO (21) Update of Rept. no. DOT/FAA/EM-82/89.

DE (23) *Fuels, *Costs, *Energy conservation, *Economic analysis
Civil aviation, Supplies, Requirements, Energy, Transportation, Aviation fuels, Natural gas, Synthetic fuels, Oils, Production, Global, Forecasting, Automotive fuels

ID (25) *Fuel conservation, OPEC(Organization of Petroleum Exporting Countries)

AB (27) This report is a sequel/update of The Impact of Petroleum, Synthetic and Cryogenic Fuels on Civil Aviation, DOT/FAA/EM-82/29, June, 1982. Where the earlier report is more concerned with energy resources and availability, this report is more concerned with energy supply/demand balance and with prices. The report reviews world and U.S. energy, U.S. transportation energy, aviation fuel, natural gas, alternative fuels and energy sources, synthetic fuels, aviation fuel conservation, and petroleum price vulnerability. It draws heavily on The National Energy Policy Plan of 1983 and its supporting documents. World oil production and prices should remain generally steady for thirty to fifty years,

growing slightly faster than the world economy. Near-term prices should be softer. OPEC can raise prices whenever demand for its production exceeds 80% of OPEC production capacity. The U.S. could delay or reverse future price rises by encouraging, or at least reducing restrictions against, domestic production. All future energy forecasts are risky. A disruption in crude production at any time until at least year 2000, can easily increase fuel prices by 100%.

AN (1) AD-P200 006/XAG

FG (2) 010300

110400

201100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Damage Tolerance Certification of Civil Composite Material Aircraft Structure

AU (10) Soderquist, J. R.

RD (11) Nov 1983

PG (12) 12 Pages

RC (20) Unclassified report

NO (21) This article is from 'Proceedings of the Conference on Fibrous Composites in Structural Design (6th) Held at New Orleans, Louisiana on 24-27 January 1983,' AD-B080 650L, pIII-1-III-12.

AL (22) Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Nov 83. Other requests must be referred to Commander, Army Materials and Mechanics Research Center, Attn: DRXMR-PL, Watertown, MA 02172.

DE (23) *Composite materials, *Composite structures, *Airframes, *Tolerances(Mechanics)

Damage, Safety, Requirements, Standards, Specifications, Regulations, Structural mechanics, Strength(Mechanics), Test and evaluation, Symposia

ID (25) Component Reports

DL (33) 03

AN (1) AD-A134 860/XAG

FG (2) 010500

010600

050200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil

Aviation Security Program.

DN (9) Recurring rept. 1 Jan-30 Jun 83.

RD (11) 21 Oct 1983

PG (12) 20 Pages

RS (14) DOT/FAA-ACS-83-1(18)

RC (20) Unclassified report

DE (23) *Civil aviation, *Security, *Reports

Congress, Public safety, Cost effectiveness, Passenger aircraft, Passengers, Aircraft hijacking, Sabotage, Aviation safety, Threat evaluation, Operational effectiveness, Airports, International airports, Commercial aviation

ID (25) Passenger screening, Bomb threats

AB (27) This report provides details on the effectiveness of security screening of passengers and all property intended to be carried in the aircraft cabin in air transportation or intrastate air transportation. It also provides a statistical summary of aircraft hijackings and alleged violations of Federal Aviation regulations pertaining to security screening. (Author)

AN (1) AD-A135 374/XAG

FG (2) 010305

110400

110900

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A Laboratory Test for Evaluating the Fire Containment Characteristics of Aircraft Class D Cargo Compartment Lining Material.

DN (9) Final rept. Jul 82-Mar 83

AU (10) Brown, L. J., Jr.

Cole, C. R.

RD (11) Oct 1983

PG (12) 37 Pages

RS (14) DOT/FAA/CT-83/44

RC (20) Unclassified report

DE (23) *Fire resistant textiles, *Fire resistance

Transport aircraft, Cargo, Storage, Compartments, Linings, Polyamide plastics, Nylon, Epoxy composites, Test methods, Test equipment, Burners

ID (25) Kevlar, Nomex, LPN-FAA-181-350-400

AB (27) The Federal Aviation Administration Standard 2-gallon/hour burner was adapted to measure the burn-through resistance of aircraft cargo compartment lining materials. This laboratory test can subject lining

samples to the fire conditions found in full-scale class D cargo compartment tests. A 5-minute test period is of adequate duration to evaluate the performance of cargo lining materials, based on full-scale test results which showed that class D fire intensity is reduced to a smoldering state after several minutes. It was determined that the 2-gallon/hour burner test is superior to the vertical and 45 deg bunsen burner tests specified in Federal Air Regulations (FAR's) 25.853 and 25.855 for evaluating the flammability and burn-through resistance of cargo compartment lining materials. The following criteria for class D cargo compartment lining materials using the 2-gallon/hour burner test are proposed: Sample must prevent burn-through for 5 minutes, and peak temperatures at 4 inches above the upper surface of a horizontal test sample should not exceed 400 deg Fahrenheit. Based on results with this laboratory test, it is concluded that fiberglass lining materials provide sufficient protection to prevent burn-through in a class D cargo compartment fire; however, Nomex and Kevlar lining materials will not contain a class D cargo compartment fire. (Author)

AN (1) AD-A169 049/XAG

FG (2) 040100

200300

250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) International Aerospace and Ground Conference on Lightning and Static Electricity (8th), Lightning Technology Roundup. Held in Fort Worth, Texas on 21-23 June 1983. Addendum.

DN (9) Conference publication.

RD (11) Oct 1983

PG (12) 142 Pages

RS (14) DOT/FAA/CT-83/25-ADD

RC (20) Unclassified report

NO (21) Addendum to AD-A135 100.

DE (23) *LIGHTNING, *STATIC ELECTRICITY, *AVIATION SAFETY AEROSPACE SYSTEMS, ELECTRICAL PROPERTIES, ELECTRONICS, ENGINEERS,

GROUND LEVEL, INTERNATIONAL, LOCATORS, SIMULATION, SYMPOSIA, TRANSIENTS, RADIO EQUIPMENT

ID (25) P static, Lightning strikes

AB (27) This addendum is a compilation of papers presented at the 1983 International Aerospace and Ground Conference on Lightning and Static Electricity, held at the Fort Worth Hilton Hotel, Fort Worth Texas, June 21-23, 1983, but not available for publication in the original

conference proceedings. The conference was sponsored by the NICG in concert with the Florida Institute of Technology and in association with the Institute of Electrical and Electronic Engineers, SAE-AE4 committee, the United Kingdom Civil Aviation Authority, Royal Aircraft Establishment, Farnborough, Culham Laboratory. Keywords: Phenomenology; Lightning locators; 'P' static and corona; Lightning simulation. (Author)

AN (1) AD-A133 594/XAG

FG (2) 050800

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Age, Altitude, and Workload Effects on Complex Performance

AU (10) Mertens, H. W.

Higgins, E. A.

McKenzie, J. M.

RD (11) Sep 1983

PG (12) 18 Pages

RS (14) FAA-AM-83-15

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *PILOTS

ALTITUDE, MEASUREMENT, PERFORMANCE TESTS, MONITORING, PROBLEM SOLVING,

TRACKING, TARGET RECOGNITION, HEART RATE, EXCRETION, EPINEPHRINE, LEVARTERENOL, BIOCHEMISTRY, PHYSIOLOGICAL EFFECTS

ID (25) Age factor

AB (27) Fifteen healthy men in each of three age groups, 20-29 yrs, 40-49 yrs, and 60-69 yrs, were evaluated regarding complex performance in two altitude conditions (ground level vs. 3,810 m) which were administered during performance testing. Performance was measured during a 3-h test session with the Multiple Task Performance Battery (MTPB) which involved time-shared performance of several flight-related tasks presented in different combinations to vary workload. MTPB tasks consisted of monitoring of warning lights and meters, mental arithmetic, problem solving, visual target identification, and tracking. Heart rate decreased slightly at the 3,810 m altitude in the 60-69 yr group, but increased significantly at altitude in the two younger groups. Both epinephrine and norepinephrine excretion rates were highest in the 20-29 yr group and lowest in the 40-49 yr group. Age related decrements occurred in monitoring tasks, information-processing tasks, and a tracking task involving

psychomotor-coordination. Performance differences occurring as a function of age were evident predominantly at moderate and high workload levels. There were no important effects of altitude on performance. Physiological and biochemical responses had little relation to performance. Implications of these findings for future research relating age to pilot performance are discussed.

AN (1) AD-A133 602/XAG

FG (2) 050800

050900

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Rate of Initial Recovery and Subsequent Radar Monitoring Performance Following a Simulated Emergency Involving Startle

AU (10) Thackray, Richard I.
Touchstone, R. Mark

RD (11) Sep 1983

PG (12) 22 Pages

RS (14) FAA-AM-83-13

RC (20) Unclassified report

DE (23) *Performance(Human), *Air traffic controllers, *Emergencies

Shock, Air traffic control systems, Radar equipment, Stress(Psychology), Stimulation(Physiology), Emotions, Recovery, Adjustment(Psychology), Auditory signals, Stimuli, Monitoring, Display systems, Noise(Sound), Response(Biology), Reaction time, Information processing, Errors, Rates, Perception, Motor reactions, Simulation, Human factors engineering

ID (25) Startle, Air traffic control

AB (27) The present study employed auditory startle to simulate the principal components (unexpectedness, fear, and physiological arousal) that are common to many types of sudden emergencies and compared performance recovery following startle with recovery following a nonstartling stimulus. The subject's primary task was to monitor a simulated air traffic control radar display. Performance recovery following the emergency (a radar failure signaled by either a loud or low level noise) was assessed in terms of response time and error rate on a secondary information processing (serial reaction) task and also in terms of subsequent performance on the radar monitoring task. Although the high intensity noise was clearly startling, while subjects exposed to the lower intensity noise showed only a surprise reaction, subsequent performance of the two noise exposure groups differed

significantly in only two respects: The variance of initial response times was greater in the startled group, and this group had a higher frequency of incorrect responses on the serial reaction task during the first minute following stimulation. A comparison of these findings with those of other studies of simulated emergencies suggests that recovery time for simple perceptual-motor responses during the initial shock phase of an emergency is quite rapid (on the order of 1 to 3 s), and this appears to be independent of whether or not the emergency is startling and emotionally arousing or simply surprising and unexpected. If the shock phase evokes heightened emotional-physiological arousal as in the case of startle, information-processing ability may be impaired for approximately 30 to 60 s following the stimulus event.

AN (1) AD-A135 606/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Establishment and Discontinuance Criteria for Precision Landing Systems.

DN (9) Draft rept.

AU (10) Hawkins, J. A.

RD (11) Sep 1983

PG (12) 113 Pages

RS (14) FAA-APO-83-10

RC (20) Unclassified report

DE (23) *Microwave landing systems

Airports, Aircraft landings, Aviation safety, Economic analysis, Decision making

AB (27) This report describes the development of establishment criteria for the standard Microwave Landing System (MLS) with approach lights. The criteria were empirically derived from a benefit/cost analysis. The key elements of the criteria are expressed as a function of (a) annual instrument approaches (AIA's) by user category, (b) non-precision approach minima on the candidate runway, and (c) the probability of IFR weather at the airport. It is estimated that through 1985, the criteria will identify 218 new MLS candidates. Through 1995 the number of potential candidates is expected to reach 324. In addition to these systems, there will be approximately 768 systems in the ILS inventory that will be replaced by an MLS in accordance with guidelines developed in FAA's Microwave Landing System Transition Plan. This represents 1092 (768 + 324) or approximately 1100 systems by 1995. Benefits of an MLS vary widely depending on the proportionate use of the MLS runway, the

distribution of instrument weather at the airport, aircraft operating costs, average number of passengers, and other factors. The MLS candidate runways, after first being qualified by regional offices on the basis of establishment criteria published in Airway Planning Standard Number One (APS-1), will then be evaluated by a benefit/cost analysis at FAA Headquarters.

AN (1) AD-A135 644/XAG

**FG (2) 050200
230200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE**

TI (6) A Bibliography of Shift Work Research: 1950-1982

AU (10) Schroeder, D. J.

Goulden, D. R.

RD (11) Sep 1983

PG (12) 103 Pages

RS (14) FAA-AM-83-17

RC (20) Unclassified report

DE (23) *Ergonomics, *Work, *Scheduling, *Job analysis, *Bibliographies
Job satisfaction, Workload, Time intervals, Productivity, Efficiency,
Performance(Human), Fatigue(Physiology), Stress(Physiology), Response

ID (25) *Shift work, Jet lag, Work schedules

AB (27) This bibliography was developed as part of a research task concerning the impact of shift work on employee job satisfaction, productivity, perceived job difficulty, and subjective health. Some selectivity was exercised in the choice of references for inclusion: the search covered the years 1950 through 1982; there was an emphasis on human versus animal studies; and the focus of the selected article or study had to be on the effects of an actual alteration in sleep/work hours. The latter criterion involved the exclusion of a large number of citations concerning the assessment of circadian effects on physiological responses and performance. However, an included reference by Holly et al (1981) provides a rather extensive bibliography that is more specifically focused on circadian influences on physiological and psychological variables. Since time zone changes during flight are equivalent to rapid shifts in work/sleep hours, and since this is an area of interest to the FAA, references on this topic were included. Of the citations, approximately 8% are from the 1950's, 20% from the 1960's, and slightly over half from the 1970's. The most productive year was 1981 (nearly 10% of the references), when several books on the shift topic were edited and published. Significant improvements in the

quality of the research analyses have been observed over this same time period, with the increased use of multivariate techniques illustrating the highly complex nature of individual responses to alternating work schedules. However, it is also apparent that there has been some duplication of effort and investigators need to be more aware of the available world-wide literature.

AN (1) AD-A135 645/XAG

**FG (2) 010600
050100**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORTS
PROGRAMS**

TI (6) Advanced Automation Program.

DN (9) Program master plan.

RD (11) 21 Sep 1983

PG (12) 50 Pages

RS (14) DOT/FAA/AP-83/3

RC (20) Unclassified report

DE (23) *Civil aviation, *Management planning and control, *Computer applications
Planning programming budgeting, Contract administration, Policies, Automation, Systems engineering, Specifications, Cost effectiveness, Systems analysis, Test and evaluation, Technology forecasting, Operational effectiveness, Missions

ID (25) *Program master plan, *Advanced automation, FAA(Federal Aviation Administration)

AB (27) The Program Master Plan describes the approach to be used for implementation of the Federal Aviation Administration Advanced Automation Program. It presents the program mission needs and objectives, and describes the technical plan, management approach, acquisition strategy, contractor support program schedule, and funding plan for implementation of the program. Accordingly, it is the top level program document, stating FAA plans and policies for program execution. It will be supplemented by supporting documents that define the specific plans and mechanisms for program management, implementation, transition and control. (Author)

AN (1) AD-A136 795/XAG

**FG (2) 120500
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
ENGINEERING
SERVICE

TI (6) Automated En Route Air Traffic Control Algorithmic Specifications.
Volume 3. Flight Plan Conflict Probe

AU (10) Niedringhaus,W. P.

Frolow,I.

Corbin,J. C.

Gisch,A. H.

Taber,N. J.

RD (11) Sep 1983

PG (12) 194 Pages

RS (14) DOT/FAA/ES-83/6

RC (20) Unclassified report

NO (21) See also Volume 4, AD-A136 796.

DE (23) *Air traffic control systems, *Algorithms, *Collision avoidance,
*Trajectories, *Computer programs

Estimates, Decision making, Conflict, Separation, Artificial
intelligence, Resolution, Airborne

ID (25) NAS(National Airspace System), AERA(Automated En Route Air Traffic
Control), FPCP(Flight Plan Conflict Probe), AAS(Advanced Automation
System), TJE(Trajectory Estimation)

AB (27) This specification establishes design criteria for the Flight Plan
Conflict Probe (FPCP), a part of the initial automation for the
Advanced Automation System of the FAA's next generation air traffic
control system. The algorithm provides data for a display to air
traffic controllers whenever any two aircraft are predicted to approach
each other within certain separation criteria in the horizontal and
vertical dimensions. Such a pair of aircraft is called a conflict.
Trajectory Estimation, another function of the Advanced Automation
System, models the predicted position of each aircraft as a trajectory,
consisting of points in (x,y,z,t) space and the line segments
connecting them. Trajectories reflect both pilot intent (his approved
flight plan) and current position (radar reports). FPCP automatically
tests all trajectory pairs for conflicts. FPCP is designed to be
compatible with current air traffic control procedures. It displays
information early enough for controllers to resolve conflicts in a
deliberate fashion. It alerts the the controller when prompt action is
deemed necessary to resolve a conflict.

AN (1) AD-A136 796/XAG

FG (2) 120500
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
ENGINEERING
SERVICE

TI (6) Automated En Route Air Traffic Control Algorithmic Specifications.
Volume 4. Sector Workload Probe

AU (10) Niedringhaus,W. P.

Gisch,A. H.

RD (11) Sep 1983

PG (12) 122 Pages

RS (14) DOT/FAA/ES-83/7

RC (20) Unclassified report

NO (21) See also Volume 3, AD-A136 795.

DE (23) *Air traffic control systems, *Algorithms, *Workload, *Computer
programs

Systems engineering, Automation, Specifications, Collision avoidance,
Conflict, Air space, Supervisors, Airborne, Artificial intelligence,
Computations

ID (25) NAS(National Airspace System), AERA(Automated En Route Air Traffic
Control), AAS(Advanced Automation System), SWP(Sector Workload Probe)

AB (27) This specification establishes design criteria for a Sector Workload
Probe algorithm, which is part of the initial automation for the
Advanced Automation System of the Federal Aviation Administration's Air
Traffic Control System. This algorithm calculates measures related to
workload. The algorithm takes into account a variety of measures. These
measures include the following: average aircraft count; number of
expected aircraft or airspace conflicts (as generated by two other
advanced automation algorithms, Flight Plan Conflict Probe and Airspace
Probe); a measure of actions which must be carried out by controllers;
a density measure; and an overall measure. For every sector, each
measure is projected for various time intervals of approximately 15
minutes up to about two hours in the future. An Area Supervisor or Area
Manager may, at any time, request a display of the current and
projected workload measures for a specified sector or set of sectors.
Also, the Area Supervisor may monitor selected sector(s) to determine
if certain measures exceed or fall below thresholds that he or she
specifies.

AN (1) AD-A136 831/XAG

FG (2) 050100
120500
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
ENGINEERING

SERVICE

TI (6) Operational and Functional Description of AERA 1.01

AU (10) Swedish,W. J.

Simmerman,B. C.

Lipps,A. W.

Steinbacher,J. G.

RD (11) 31 Sep 1983

PG (12) 99 Pages

RS (14) DOT/FAA/ES-83/9

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Systems engineering, *Computer programs
Automation, Airborne, Decision making, Trajectories, Estimates, Air
space, Probes, Specifications, Artificial intelligence

ID (25) NAS(National Airspace System), AERA(Automated En Route Air Traffic
Control), TJE(Trajectory Estimation), AAS(Advanced Automation System)

AB (27) The AERA 1.01 functions, to be implemented as part of the Advanced
Automation System for en route air traffic control, consist of:
Trajectory Estimation; Flight Plan Conflict Probe; Airspace Probe; and
Sector Workload Probe. This document presents a high-level operational
and functional description of these four advanced automation functions.
The operational description discusses the effects of the advanced
automation functions on the controller: what information must be
provided to the functions, what information is received from the
function, which controller receives that information, and what the
controller's response should be. The effect of these functions on the
structure of the controller's job, such as training and staffing
requirements, is also discussed. The functional description presents
the logical organization of the advanced automation functions,
including the role of each function and the interfaces between
functions. (Author)

AN (1) AD-A136 850/XAG

FG (2) 120500

120600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
ENGINEERING

SERVICE

TI (6) Automated En Route Air Traffic Control Algorithmic Specifications.
Volume 2. Airspace Probe

AU (10) Kingsbury,J. A.

Malthouse,N. S.

Schwamb,K. B.

RD (11) 31 Sep 1983

PG (12) 138 Pages

RS (14) DOT/FAA/ES-83/5

RC (20) Unclassified report

NO (21) See also Volume 3, AD-A136 795.

DE (23) *Algorithms, *Computer programs, *Computer applications, *Air traffic
control systems, *Probes

Air space, Volume, Penetration, Area coverage, Predictions,
Trajectories, Warning systems, Altitude, Safety, Routing, Air traffic,
Flight paths, Air traffic controllers, Functions, Specifications,
Automation, Decision making, Artificial intelligence, Data processing,
Computers

AB (27) This Algorithmic Specification establishes the design criteria for four
advanced automation software functions to be included in the initial
software package of the Advanced Automation System (AAS). The need for
each function is discussed within the context of the existing National
Airspace System (NAS). A top-down definition of each function is
provided with descriptions on increasingly more detailed levels. The
final, most detailed description of each function identifies the data
flows and transformations taking place within each function. This
document consists of five volumes. Volume 2, Airspace Probe, contains a
functional design for the use of trajectory data to predict
penetrations of airspace, volumes from which the general flying public
is normally restricted.

AN (1) AD-A136 851/XAG

FG (2) 120500

120600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
ENGINEERING

SERVICE

TI (6) Automated En Route Air Traffic Control Algorithmic Specifications.
Volume 5. Data Specification

AU (10) Fellmand,L.

Schuck,C. W.

RD (11) Sep 1983

PG (12) 92 Pages

RS (14) DOT/FAA/ES/-83/8

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A136 850.

DE (23) *Algorithms, *Computer programs, *Computer applications, *Air traffic
control systems

Automation, Decision making, Routing, Air traffic, Artificial intelligence, Computers, Functions, Data processing, Specifications, Semantics, Data bases, Models, Words(Language)

ID (25) AERA computer program

AB (27) This Algorithmic Specification establishes the design criteria for four advanced automation software functions to be included in the initial software package of the Advanced Automation System (AAS). The need for each function is discussed within the context of the existing National Airspace System (NAS). A top-down definition of each function is provided with descriptions on increasingly more detailed levels. The final, most detailed description of each function identifies the data flows and transformations taking place within each function. This document consists of five volumes. Volume 5, Data Specification, contains the definitions of important data constructs used across all the algorithmic specifications. The data are accumulated in a modified relational data base.

AN (1) AD-A136 852/XAG

FG (2) 120500

120600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
ENGINEERING
SERVICE

TI (6) Operational and Functional Description of the AERA Packages

AU (10) Lipps,A. W.

Swedish,W. J.

Zimmerman,B. C.

RD (11) 11 Sep 1983

PG (12) 120 Pages

RS (14) DOT/FAA/ES-83/10

RC (20) Unclassified report

DE (23) *Computer programs, *Computer applications, *Air traffic control systems

Automation, Decision making, Routing, Air traffic, Artificial intelligence, Computers, Functions, Packaging, Computer logic, Air traffic controllers, Man computer interface, Information exchange

ID (25) AERA computer program

AB (27) AERA consists of a series of new or enhanced software functions which help the performance of en route air traffic control. Current planning calls for the AERA functions to be developed incrementally in a series of six separate packages. This document presents an overview of the AERA packages, with particular emphasis on the way the AERA functions

interact with other ATC functions and with the controller. Functional descriptions of each package present the logical organization of the AERA functions, including the role of each function and the interfaces between functions. The operational descriptions discuss how the AERA functions will be used by the controller: when the function is invoked, what information is exchanged between the function and the controller, and how the controller is expected to respond.

AN (1) AD-A137 088/XAG

FG (2) 010500

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230300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
ENGINEERING
SERVICE

TI (6) Automated En Route Air Traffic Control Algorithmic Specifications.
Volume 1. Trajectory Estimation

AU (10) Kingsburg,J. A.

Pool,D. A.

Ghosh,S. K.

Malthouse,N. S.

Rouillier,G. J.

RD (11) Sep 1983

PG (12) 395 Pages

RS (14) DOT/FAA/ES-83/4

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A136 850.

DE (23) *Air traffic control systems, *Automation

Decision making, Artificial intelligence, Air traffic, Flight paths, Routing, Flight envelope, Computer programs, Input output processing, Systems analysis, Operational effectiveness, Trajectories, Estimates

ID (25) AAS(Advanced Automatic System)

AB (27) This Algorithmic Specification establishes the design criteria for four advanced automation software functions to be included in the initial software package of the Advanced Automation System (AAS). The need for each function is discussed within the context of the existing National Airspace System (NAS). A top-down definition of each function is provided with descriptions on increasingly more detailed levels. The final, most detailed description of each function identifies the data flows and transformations taking place within each function. This document consists of five volumes. Volume 1, Trajectory Estimation, contains a functional design for deriving a predicted four-dimensional (space and time) path, or trajectory, for each participating aircraft.

AN (1) AD-A142 444/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR
FOR AIRPORTS

TI (6) Report of Accomplishments under the Airport Improvement Program.

DN (9) Annual rept. no. 2, for period ending 30 Sep 83

AU (10) Martin, V. J.

RD (11) 30 Sep 1983

PG (12) 112 Pages

RS (14) FAA-ARP-84-2

RC (20) Unclassified report

DE (23) *Airports, *Terminal flight facilities

Modification, Planning, Construction, Grants, Resource management, Aviation safety, Noise reduction, Commercial aviation, Federal law, Tables(Data)

ID (25) General aviation, Upgrading, Reliever airports, Civil rights

AB (27) Section 521 of the Airport and Airway Improvement Act of 1982 (Public Law 97-248) requires that the Secretary of Transportation submit an annual report to Congress describing the accomplishments of the airport grant program. This report covers activities for the fiscal year ending September 30, 1983. (Author)

AN (1) AD-A142 493/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA (Federal Aviation Administration) Air Traffic Activity FY 1983.

DN (9) Rept. for 1 Oct 82-30 Sep 83

AU (10) Trembley, N.

RD (11) 30 Sep 1983

PG (12) 219 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC

CIVIL AVIATION, INSTRUMENT FLIGHT, AIRCRAFT LANDINGS, TAKEOFF, TABLES(DATA)

AB (27) This report furnishes terminal and en route air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations

(FSSs), International Flight Service Stations (IFSSs), and Approach Control Facilities.

AN (1) AD-A143 096/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Anthropometric and Mass Distribution Characteristics of the Adult Female. Revised

AU (10) Young, J. W.

Chandler, R. F.

Snow, C. C.

Robinette, K. M.

Zehner, G. F.

RD (11) Sep 1983

PG (12) 109 Pages

RS (14) FAA-AM-83-16-REV

RC (20) Unclassified report

NO (21) Supersedes AD-A135 316.

DE (23) *Anthropometry, *Females

Human body, Measurement, Data processing, Anatomical models, Regression analysis, Tables(Data), Sizes(Dimensions)

ID (25) LPN-AM-B-79-PRS-60, LPN-AM-B-80-PRS-60, LPN-AM-B-81-PRS-60, LPN-AM-B-82-PRS-60

AB (27) This study of 46 living adult females is part of a long-range research program designed to establish valid analytical relationships between readily measured body dimensions and mass distribution characteristics of living populations. Presented in this report are data describing the mass distribution characteristics of primary and composite body segments. The report also contains sets of regression equations which can be used to predict segmental volumes and moments of inertia from anthropometric data. The data base is derived from both classical anthropometric measurements and from stereophotogrammetric techniques. Subjects were representative of a general United States population as defined by the 1971-74 Public Health Service, Health and Nutrition Examination Survey (HANES). The data obtained describe segment and segment composite volumes, centers of volume, intersegment cut centroids, principal inertial axes, and surface anatomical landmarks with respect to anatomical axes developed for each segment. Experiments designed to test the validity of research techniques and controls, and to measure the differences between stereophoto-metrically derived values and values obtained by direct measurement techniques are also

described here.

AN (1) AD-A131 964/XAG

**FG (2) 050100
120600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Information Resources Management Plan.

RD (11) Aug 1983

PG (12) 208 Pages

RC (20) Unclassified report

DE (23) *Management planning and control, *Resource management, *Data management, *Data processing, *Information systems Planning programming budgeting, Systems analysis, Automation, Microprocessors, Requirements, Planning, Decision making, Systems management, Participative management, Problem solving, Strategy, Policies, Performance(Engineering), Cost effectiveness, Training, Civil aviation, United States Government

ID (25) FAA(Federal Aviation Administration)

AB (27) This Plan documents the Federal Aviation Administration's long-term plan for applying systems analysis and automated data processing technology to its information needs. As a long-range Plan, it provides a sound basis for both the Executive and Legislative Branches to properly appraise funding needs. It retains the flexibility needed to accommodate future technology as it becomes applicable to individual subsystems and it becomes evident that the new technology will improve our return on investment. The Plan begins institutionalizing a process of regular and comprehensive assessments of FAA's information posture and needs. This Plan is the framework for the development, operation, and management of agency information resources and for the regular review of performance as well as resource and priority decisions. The FAA will follow through on this planning effort with the detailed requirements documentation, system specifications, cost benefit analyses, and the other actions sound system management requires.

AN (1) AD-A133 461/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS**

TI (6) Establishment and Discontinuance Criteria for Airport Traffic Control

Towers.

DN (9) Final rept.

AU (10) Helzer, Susan Godby

RD (11) Aug 1983

PG (12) 145 Pages

RS (14) FAA-APO-83-2

RC (20) Unclassified report

DE (23) *Towers, *Air traffic control systems

Requirements, Benefits, Costs, Utilization, Economic analysis, Mathematical models, Computerized simulation, Computer programs

AB (27) This report presents an economic analysis of VFR Airport Traffic Control Towers and criteria for tower establishment and discontinuance based on this analysis. Site-specific activity forecasts are used to develop tower benefits from prevented collisions between aircraft, other prevented accidents, and reduced flying time. Establishment costs include annual costs for staffing, maintenance, equipment, supplies and leased services and investment costs for facilities, equipment, and operational start up. The present value of tower benefits are compared with the present value of tower costs over a fifteen-year time frame. A location meets tower establishment criteria when the benefits which derive from operating the tower exceed the costs; a tower meets discontinuance criteria, when the costs of continued operation exceed the benefits. Applying the criteria to more than four-thousand airports, seventeen sites satisfy the benefit/cost criteria for tower establishment and fifty-five towers satisfy the benefit/cost criteria for discontinuance. These figures compare with twenty-five tower establishment candidates and forty-two tower discontinuance candidates under previous tower criteria. The sensitivity of the criteria results to several key assumptions is also examined. (Author)

AN (1) AD-A134 425/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Survey of Characteristics of Near Mid-Air Collisions Involving
Helicopters.**

DN (9) Final rept.

AU (10) Billmann, Barry R.

RD (11) Aug 1983

PG (12) 25 Pages

RS (14) DOT/FAA/CT-83/40

RC (20) Unclassified report

DE (23) *Helicopters, *Collisions

Collision avoidance, Case studies, Environments, Weather, Air traffic control systems, Flight maneuvers, Statistical analysis

ID (25) LPN-FAR-052-244-340

AB (27) Rotorcraft operating characteristics may require a collision avoidance system to perform a substantially different function than is provided to conventional fixed wing aircraft by Traffic Alert and Collision Avoidance System (TCAS) I or the Minimum TCAS II. This paper has been prepared to provide analysis of environmental conditions and operational characteristics of near mid-air collision situations involving rotorcraft. The analysis is intended to provide data in establishing preliminary human factors and procedural design requirements for a rotorcraft collision avoidance system. The information should be used to establish TCAS rotorcraft Program experimental requirements. (Author)

AN (1) AD-A134 598/XAG

FG (2) 010300
140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Levels and Data Analyses for Small Prop-Driven Aircraft

AU (10) Newman, J. Steven

Bland, Tyrone L.
Daboin, Sharon A.

RD (11) Aug 1983

PG (12) 193 Pages

RS (14) FAA-EE-83-1

RN (18) XH-FAA-AEE

RC (20) Unclassified report

DE (23) *MEASUREMENT, *AIRCRAFT NOISE

MONITORING, LEVEL(QUANTITY), DATA ACQUISITION, STANDARDS, NOISE, NOISE

POLLUTION, AIRCRAFT ENGINE NOISE, AERIAL PROPELLERS

AB (27) During the Summer and Fall of 1982, the FAA Office of Environment and Energy, Noise Abatement Division, conducted a noise measurement program to evaluate proposed revisions of International and U.S. noise certification standards for light-weight propeller-driven aircraft. Tests were conducted using both single- and twin-engine propeller-driven light aircraft. Normally aspirated, turbo-charged, and turboprop engines were included, as were both fixed and variable pitch propellers. Takeoff noise measurements were made for eighteen aircraft. Additional measurements for nine of these aircraft (during level

flight) provided sufficient data to examine the relationship of noise level versus helical tip Mach Number and engine power setting. This report presents noise measurements, aircraft position data, meteorological data, and cockpit instrument readings acquired during the test. Data analyses include: corrections to proposed noise certification reference conditions, development of Mach Number and Power Correction functions, empirical examination of sound propagation, regression of noise level versus weight (and the logarithm of weight) and correlation of acoustical intensity (AL) and acoustical dose (SEL) noise metrics. While this report concludes that a takeoff noise certification procedure is feasible and will provide consistent results for a given aircraft, it remains uncertain whether or not equal stringency (or even comparable stringency) can be achieved between the existing certification procedure and the proposed takeoff procedure.

AN (1) AD-B170 418/XAG

FG (2) 170703
010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Helicopter Global Positioning System Navigation with the Magnavox Z-Set.

DN (9) Technical note Jul 81-Jan 82

AU (10) Till, Robert D.

RD (11) Aug 1983

PG (12) 161 Pages

RS (14) DOT/FAA/CT-TN83/03

RN (18) XH-DOT/FAA/CT

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *GLOBAL POSITIONING SYSTEM, *NAVIGATION SATELLITES

AIRCRAFT, APPROACH, ARTIFICIAL SATELLITES, CIRCULAR, CONSTELLATIONS, COSTS, DOCUMENTS, DYNAMICS, FLIGHT, GEOMETRY, GUIDANCE,

HELICOPTERS,

LABORATORIES, LOW COSTS, MANAGEMENT, PROTOTYPES, RADAR,

RECEIVERS,

REQUIREMENTS, ROTARY WING AIRCRAFT, SHIELDING, TEST AND

EVALUATION,

WEATHER, WINGS

DL (33) 12

AN (1) AD-A132 649/XAG

FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Color Perception and ATC Job Performance

AU (10) Pickrel,Evan W.

Convey,John J.

RD (11) Jul 1983

PG (12) 20 Pages

RS (14) FAA-AM-83-11

RC (20) Unclassified report

DE (23) *Color vision, *Air traffic controllers, *Performance tests

Standardization, Validation, Reliability, Simulation, Costs, Discrimination, Jobs, Requirements, Linear regression analysis, Correlation, Performance(Human), Qualifications, Personnel selection

ID (25) PIP(Pseudoisochromatic Plates), Job relatedness

AB (27) Current OMP policy and guidance requires demonstrated job-relatedness and reasonable accommodation in the application of physical qualifications. The OPM has accomplished an analysis of the Air Traffic Control Specialist (ATCS) series and recommended development of functional color vision tests 'to reflect as closely as possible the functional color vision requirements of the specialty. If the Pseudoisochromatic plate (PIP) test is retained for prescreening to identify applicants for whom followup functional performance testing or reasonable accommodation is necessary, its use also must be standardized.' This research is directed toward accomplishment of those recommendations. Standard Pseudoisochromatic (PIP) plate test was validated against performance of ATCS tasks, and it demonstrated job relatedness and reasonable accommodation for application of physical qualification standards. A functional color vision test was created, but further development and validation would be needed before its operational use, and procurement would be very costly as compared to the standard PIP tests that are readily available to medical examiners.

AN (1) AD-A134 898/XAG

FG (2) 131200

010200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The 1980 and 1981 Accident Experience of Civil Airmen with Selected Visual Pathology

AU (10) Dille, J. R.

Booze, C. F., Jr

RD (11) Jul 1983

PG (12) 11 Pages

RS (14) FAA-AM-83-18

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS, *ACCIDENT INVESTIGATIONS, *VISION, *VISUAL DEFECTS

PILOTS, DEFICIENCIES, DEFECT ANALYSIS, EYE, PATHOLOGY

AB (27) In studies of the 1974-76 accident experience of U.S. general aviation pilots with static physical defects, all the significantly increased rates and ratios were for visual defect categories--blindness, or absence of either eye, deficient distant vision, deficient color vision with no operational limitations, and contact lenses. A 1979 study was limited to accident airmen with 19 visual deficiencies. The 1,140 pilots with aphakia and 173 with artificial lens implants had significantly higher rates, but the monocular pilots and contact lens users did not. The present study examined the 1980-81 accident experience of 4,169 monocular pilots, 1,299 with amblyopia, 969 with aphakia, 285 with lens implants, 118 with a history of diplopia, 1,269 with a tropia, 2,601 with hyperphoria >1 diopter, and 2,711 with esophoria or exophoria >6 diopters by class of medical certificate held. Numbers were too small for statistical treatment, but first and second class medical certificate holders, who often have more accidents per 1,000 airmen, consistently had progressively lower accident rates per 100,000 hours. They fly more. Monocular, aphakic, lens implant, and amblyopic accident airmen had higher accident rates than did the total airman population. Bases were found to question the value and adequacy of phoria and field of vision testing.

AN (1) AD-A134 912/XAG

FG (2) 230200

230400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Objective Evaluation of Aircrew Protective Breathing Equipment. V. Mask/Goggles Combinations for Female Crewmembers

AU (10) DESteiguer,D.

Saldivar,J. T.

Higgins,E. A.

Funkhouser,G. E.

RD (11) Jul 1983

PG (12) 12 Pages
RS (14) FAA-AM-83-14-5
RC (20) Unclassified report
DE (23) *Oxygen masks

AB (27) A study was conducted to determine the degree of respiratory and visual protection given to the female crewmember by various crew oxygen mask/goggle combinations. The acceptance criteria for the mask/goggle combinations were for 10 of 12 test subjects to maintain a contaminant ratio of 0.05 or less in the oxygen mask and/or simultaneously 0.1 or less in the goggle while wearing eyeglasses. Of the 23 mask/goggle combinations tested with female subjects, 8 failed to meet the acceptance criteria for adequate protection. Comparison tests on anthropometric data from male and female subjects suggest that the failures may be due, in part, to size differences in cranial and facial dimensions.

AN (1) AD-A130 074/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) General Aviation Safety Research Issues.

DN (9) Final rept.
AU (10) Ontiveros, Robert J.
RD (11) Jun 1983
PG (12) 39 Pages
RS (14) DOT/FAA/CT-83/6
RC (20) Unclassified report
DE (23) *Aviation safety

Flight training, Civil aviation, Symposia

ID (25) LPN-FAA-184-341-500

AB (27) This report is a compilation of general aviation safety research issues extracted and summarized from recent studies conducted by the Federal Aviation Administration (FAA), other government agencies, and the aviation industry. It offers an overview of conclusions and recommendations that highlight current and future problem areas in general aviation. The report addresses the expressed needs as defined by these studies which counsel research and development relevant to the interrelationships of man, machine, and environment to effectively improve the general aviation safety record.

AN (1) AD-A130 946/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A New Characterization of Supercooled Clouds below 10,000 Feet AGL (Above Ground Level).

DN (9) Final rept.

AU (10) Masters, Charles O.

RD (11) Jun 1983

PG (12) 50 Pages

RS (14) DOT/FAA/CT-83/22

RC (20) Unclassified report

DE (23) *Clouds

Low altitude, Supercooling, Water, Drops, Diameters, Atmospheric temperature, Ice formation, Statistical analysis, Graphs, Computer programs

ID (25) Supercooled clouds, Liquid water content

AB (27) Icing envelopes which effectively characterize supercooled clouds from ground level to 10,000 feet above ground level over the conterminous United States have been generated from a new data base of aerial observations. This data base, recently established via an Interagency Agreement between the FAA and the Naval Research Laboratory is the largest, most significant compilation of low-altitude supercooled characteristics currently in existence. It is intended that this new characterization serve as a basis for the establishment of design criteria and regulations that pertain to ice protection systems and equipments for low performance aircraft which typically operate below 10,000 feet. This new characterization groups the supercooled cloud properties for all cloud types observed into three temperature ranges and presents their associated values of liquid water content (LWC), range of median volume droplet diameters (MVD), and icing event duration. Details of the analysis process are discussed which use a least squares logarithmic regression estimation technique to predict the extreme values of supercooled cloud properties. (Author)

AN (1) AD-A130 962/XAG

FG (2) 130200

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Helicopter Noise Survey Performed at Parker Center, Pasadena, and Anaheim California on February 10-14, 1983

AU (10) Albersheim, Steven R.
RD (11) Jun 1983
PG (12) 34 Pages
RS (14) FAA/EE-83-5
RC (20) Unclassified report
DE (23) *Aircraft noise, *Helicopters, *Noise pollution, *Environmental impact
Sound pressure, Measurement, Surveys, Data acquisition, Monitoring,
Heliports, Statistical data, California
AB (27) The FAA conducted a noise measurement survey of helicopter operations
at three different helipads in the Los Angeles metropolitan area during
the period of February 10-14, 1983. The purpose was to gather needed
information for defining noise problems with in-service helicopter
operations in a suburban and urban area. Noise level data were sampled
for a variety of helicopters for different operating conditions and
land use characteristics. The data collected reflect noise levels at
these sites from all local sources of noise during that particular
sampling period. These data from helicopter targets of opportunity are
termed survey data as opposed to controlled test data in order to
reflect the limited control over factors which contribute to the
variability of the measured noise level. (Author)

AN (1) AD-A131 034/XAG
FG (2) 010301
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Loran-C Nonprecision Approaches in the Northeast Corridor.
DN (9) Final rept. Sep 81-Jan 82
AU (10) Lorge, Frank
RD (11) Jun 1983
PG (12) 70 Pages
RS (14) DOT/FAA/CT-82-76
RN (18) DOT/FAA/RD-82/78
RC (20) Unclassified report
DE (23) *Loran, *Distance measuring equipment, *Helicopters, *Approach,
*Navigation
Repetition rate, Flight testing, Detectors, Test facilities, Airports,
Standards, Accuracy, Intervals, Acceptability
ID (25) CH-53A aircraft, GRI(Group Repetition Interval), NEC(NorthEast
Corridor)
AB (27) This report describes a flight test designed to investigate the
suitability of Loran-C as a nonprecision approach aid in the Northeast
Corridor (NEC). Approaches were flown at six selected airports in the
NEC by a CH-53A helicopter using Loran-C for course guidance. Accuracy

criteria specified in Advisory Circular (AC) 90-45A were used as the
standard for acceptability. Data were recorded for Loran in area
calibrated and uncalibrated modes along with very high frequency
omnidirectional radio range (VOR)/distance measuring equipment (DME)
raw sensor data for comparison. The results show that the group
repetition interval (GRI)-9960 Northeast U.S. Loran-C chain met AC
90-45A requirements for nonprecision approaches in all cases when a
local area calibration was applied. The uncalibrated mode met AC 95-45A
requirements at four of the six airports. It was determined that the
Seneca, Nantucket, Carolina Beach triad should be used for navigation
throughout the flight test area. (Author)

AN (1) AD-A131 047/XAG
FG (2) 131300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Fire Containment Characteristics of Aircraft Class D Cargo
Compartments.
DN (9) Final rept. Aug 81-Sep 82
AU (10) Blake, David R.
Hill, Richard G.
RD (11) Jun 1983
PG (12) 40 Pages
RS (14) DOT/FAA/CT-82/156
RC (20) Unclassified report
DE (23) *Bays(Structural units), *Commercial aircraft, *Aircraft fires
Fire resistant materials, Cargo, Oxygen, Leakage(Fluid),
Configurations, Simulation
ID (25) *Cargo compartments, *Cargo holds, Air leakage, Cargo fires, Oxygen
concentration, Class D cargo compartments, LPN-FAA-181-350-400
AB (27) Eighteen tests were conducted in a 640-cubic foot simulated class D
cargo compartment test article. Various ceiling lining materials, cargo
loading configuration, air leakage rates, and fire sources were
examined in a effort to determining the conditions likely to occur
during a class D cargo compartment fire. The lining materials used in
this project passed the requirements of FAR 25.853 and 25.855 (vertical
and forty-five degree bunsen burner lab tests); however, they did not
always successfully contain the cargo fires. The major conclusion of
this study is that FAR 25.853 and 25.855 do not insure adequate
burn-through resistance of class D cargo liners subjected to realistic
fires. (Author)

AN (1) AD-A131 053/XAG
FG (2) 010301
200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY
TI (6) Helicopter Noise Survey Conducted at Norwood, Massachusetts on April 27, 1983
AU (10) Albersheim, Steven R.
RD (11) Jun 1983
PG (12) 30 Pages
RS (14) FAA/EE-83-6
RC (20) Unclassified report
DE (23) *Aircraft noise, *Noise pollution, *Helicopters
Urban areas, Measurement, Flight maneuvers, Flight paths, Data acquisition, Methodology, Massachusetts
ID (25) Reflect noise levels
AB (27) The FAA conducted a noise measurement survey of helicopter operations at Norwood, Massachusetts on April 27, 1983. The purpose was to gather needed information for defining noise problems with in-service helicopter operations at a general aviation airport in a suburban area. Noise level data were sampled over a period of approximately 8 hours. The data collected reflect noise levels at two different residential sites from all local source of noise during that particular sampling period. These data from helicopter target of opportunity are termed survey data as opposed to controlled test data in order to reflect the limited control factors which contribute to the variability of the measured noise. (Author)

AN (1) AD-A131 089/XAG
FG (2) 050200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Omega Data Bank Report Winter 1980 through Spring 1981.
DN (9) Data rept.
AU (10) Turnock, Theodore
RD (11) Jun 1983
PG (12) 33 Pages
RS (14) DOT/FAA/CT-82/97
RC (20) Unclassified report
DE (23) *Data bases, *Omega navigation, *Flight
Data acquisition, Data processing, Optimization, Airborne, Interfaces, Solar Flares, Passenger aircraft, Oceans, Maps, Charts, Signals,

Cassettes, Recording systems
ID (25) ONSOD(Omega Navigation System Operational Detail), Signal coverage, LPN-FAA-043-311-520
AB (27) The International Bank for Airborne-Omega Data continued operation at the Federal Aviation Administration Technical Center. This report, issued by the Data Bank, is based upon 355 flight data hours covering flights in the North and South Atlantic, parts of the Caribbean, Central and South America, Canada, and the North Pacific. These data were collected during the winter of 1980 through spring 1981. There were three major contributors to the Omega Data Bank during this period operating the same equipment types. Operationally usable signals corresponded quite well with Omega signal coverage prediction diagrams published by Omega Navigation System Operational Detail. Exceptions were noted from Ellesmore Island over the Artic Ocean for the Liberia, Hawaii, North DAKota, and Japan signals for the specific months and times of the data flights. During the months when the above flights were made, there were 114 solar flares (of magnitude M2 or greater), 10 were coincident with recored flight data. Several large magnetic solar flares peaked during aircraft data recording; however, no effects were discernible on observed signal-to-noise ratios values. This report is the third in a series of periodic technical reports which provide a standardized data presentation of Omega signal coverage, as measured by production airborne-Omega navigatio systems over routes of commercial interest under various signal environments (e.g., propagation problem regions, high solar activity). If an independent onboard position reference system was available and recorded, then Omega position differences are also presented.

AN (1) AD-A131 666/XAG
FG (2) 010300
131200
140200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Correlation of Laboratory-Scale Fire Test Methods for Seat Blocking Layer Materials with Large-Scale Test Results.
DN (9) Final rept. Aug 81-Jun 82
AU (10) Brown, Louis J., Jr.
Johnson, Richard M.
RD (11) Jun 1983
PG (12) 65 Pages
RS (14) DOT/FAA/CT-83/29
RC (20) Unclassified report

DE (23) *Aircraft fires, *Seats, *Cushioning, *Laboratory tests
Materials, Layers, Blocking, Foam, Fabrics, Test methods, Simulators,
Burning rate, Data acquisition, Measurement, Heat of combustion,
Ranking, Materials, Tables(Data), Heating, Smoke
ID (25) Upholstery material, CFS(Cabin Fire Simulator), LPN-FAA-181-350-200
AB (27) An interlaboratory study was conducted to determine the adaptability of
various laboratory fire test devices to measure aircraft seat cushion
blocking layer effectiveness. Full-scale tests conducted by the FAA
have shown blocking layers to be an effective means of delaying
aircraft seat cushion fire involvement when exposed to a large external
fuel fire. Large-scale tests conducted in the Douglas Aircraft Company
Cabin Fire Simulator (CFS) have also shown similar findings. Such
findings are fostering development of new candidate materials. However,
it is more practical to evaluate these materials in a suitable
laboratory test device rather than continuously performing expensive
full- or large-scale tests. Several such devices were determined to be
satisfactory when operated under specific conditions and when certain
parameters are measured. The satisfactory devices are the Ohio State
University (OSU) Rate of Heat Release Apparatus operated at 5.0
Watts/centimeter squared, the FAA Standard Two Gallon/Hour Burner
operated for a two minute exposure, and the Lockheed Aircraft Company
Meeker Burner. For a series of blocking layer material candidates, test
measurements obtained with the above devices exhibit comparable
rankings with weight loss or percent weight loss from larger scale CFS
tests. (Author)

AN (1) AD-A133 137/XAG

FG (2) 010500
200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY

TI (6) Airport Noise Control Strategies

AU (10) Cline, Patricia A.

RD (11) Jun 1983

PG (12) 91 Pages

RS (14) FAA/EE-83-3

RC (20) Unclassified report

DE (23) *Aircraft noise, *Airports

Noise pollution, Noise, Level(Quantity), Computer printouts,
Facilities, Requirements, Federal Law, Suppression, Strategy, User
manuals

AB (27) This report provides a comprehensive listing of noise control

strategies employed by the nation's airports. Forth-four categories of
noise control actions have been identified and are in use, singly or in
combination, by over 540 airports. Updated versions of this report will
be issued periodically.

AN (1) AD-A135 100/XAG

FG (2) 010300

040200

131200

200300

250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) International Aerospace and Ground Conference on Lightning and Static
Electricity (8th): Lightning Technology Roundup, held at Fort Worth,
Texas on 21-23 June 1983.

RD (11) Jun 1983

PG (12) 850 Pages

RS (14) DOT/FAA/CT-83/25

RN (18) XH-XD

RC (20) Unclassified report

NO (21) For sales information of individual items See AD-P002 161 - AD-P002
241.

DE (23) *LIGHTNING

SIMULATION, TRANSIENTS, POSITION(LOCATION), AIRCRAFT, VULNERABILITY,
ELECTRONIC EQUIPMENT, DIRECTION FINDING, ELECTRIC FIELDS,

ELECTRODES,

RADAR REFLECTIONS, AVIATION ACCIDENTS, PROTECTION, PROTECTIVE
EQUIPMENT, AIRCRAFT EQUIPMENT, STATISTICAL ANALYSIS, ELECTRIC

CURRENT,

RADIO WAVES, TEST FACILITIES, ELECTROSTATIC CHARGE,

THUNDERSTORMS,

ELECTRICAL GROUNDING, PRECIPITATION STATIC

ID (25) COMPILATION REPORTS, LIGHTNING STRIKES, LIGHTNING LEADERS,
LIGHTNING

RODS

AB (27) This report is a compilation of papers presented at the 1983

International Aerospace and Ground Conference on Lightning and Static

Electricity, held at the Fort Worth Hilton Hotel, Fort Worth Texas,

June 21-23, 1983. It includes papers concerning lightning

phenomenology, lightning characterization, modeling and simulation,

test criteria and techniques, and protection of both airborne and

ground systems. This conference was sponsored by the NICG in concert

with the Florida Institute of Technology and in association with the Institute of Electrical and Electronic Engineers, SAE-AE4 committee, the United Kingdom Civil Aviation Authority, Royal Aircraft Establishment, Farnborough, Culham Laboratory. (Author)

AN (1) AD-A128 760/XAG

**FG (2) 010300
131200**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analysis of Dissipation of Gaseous Extinguisher Agents in Ventilated Compartments

DN (9) Final rept.

AU (10) Eklund, Thor I.

RD (11) May 1983

PG (12) 28 Pages

RS (14) DOT/FAA/CT-83/1

RN (18) XH-FAA-CT

RC (20) Unclassified report

DE (23) *VENTILATION, *FIRE EXTINGUISHING AGENTS, *AIRCRAFT CABINS, *GAS BREAKDOWN

VOLUME, DEPLOYMENT, EXPERIMENTAL DATA, MODELS, COMPARISON, AIR FLOW,

GAS ANALYSIS, MATHEMATICAL ANALYSIS, CONCENTRATION(COMPOSITION), AVIATION SAFETY, INTEGRAL EQUATIONS, FIRE EXTINGUISHERS,

NOMOGRAPHS,

STIRRERS

ID (25) HALONS, LPN-FAA-181-350-400

AB (27) A perfect stirrer model was used to analyze the concentration decay of extinguisher agents in ventilated compartments. The exponential decay curves were integrated over time to yield dosages. In this way, extinguisher agent weights, compartment volumes, and ventilation rates were matched against allowable agent doses to yield selection nomographs for halon 1211, halon 1301, and carbon dioxide. The model predictions were compared with experimental data, and the concept of an effective air-change time was developed for practical application.

AN (1) AD-A129 287/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) U.S. (United States) Civil Airmen Statistics 1982

AU (10) Carter, Patricia W.

RD (11) 31 May 1983

PG (12) 43 Pages

RC (20) Unclassified report

DE (23) *STATISTICAL DATA, *TABLES(DATA), *COMMERCIAL AVIATION, *PILOTS, *CIVIL

AVIATION

WOMEN, INSTRUCTORS, FLIGHT, RATINGS, STUDENTS, FLIGHT INSTRUMENTS

ID (25) *Airmen, Certified airmen, Certificates

AB (27) This report furnishes detailed airmen statistics. It contains calendar year statistics on pilots and nonpilots and the number of certificates issued. (Author)

AN (1) AD-A132 648/XAG

FG (2) 230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) An Analysis of Potential Protective Breathing Devices Intended for Use by Aircraft Passengers

AU (10) DESteiguer, D.

Saldivar, J. T.

RD (11) May 1983

PG (12) 41 Pages

RS (14) FAA-AM-83-10

RN (18) FAA-AM-83-10

RC (20) Unclassified report

DE (23) *BREATHING APPARATUS, *PROTECTIVE EQUIPMENT, *AVIATION SAFETY, *PASSENGERS

PROTECTION, TOXIC AGENTS, SMOKE, FUMES, AIRCRAFT FIRES, INFLIGHT, EMERGENCIES, EVACUATION, PARTIAL PRESSURE, OXYGEN, NITROGEN,

CARBON

DIOXIDE, RESPIRATION, RATES, VOLUME, HOODS, BREATHING MASKS

ID (25) LPN-FAA-AM-B-81-PRS-13, LPN-FAA-AM-B-82-PRS-13

AB (27) This report presents the results of tests performed to examine concepts for the development of a passenger-type protective breathing device which would provide protection from toxic smoke/fumes produced during an in-flight fire and afford some protection during emergency evacuations. Data examined include expiratory P02, PN2, PC02; inspiratory PC02; respiratory rates; and respiratory volume for the devices tested.

AN (1) AD-A133 220/XAG

FG (2) 050500

050600

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Radar Training Facility Initial Validation

AU (10) Boone,James O.

RD (11) May 1983

PG (12) 29 Pages

RS (14) FAA-AM-83-9

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Aptitudes, *Personnel development Measurement, Performance(Human), Education, Scoring, Job training, Personnel selection, Models, Validation, Comparison, Standard deviation, Predictions, Personnel retention, Attrition, Job satisfaction

ID (25) *Radar training

AB (27) The Radar Training Facility (RTF), part of the Federal Aviation Administration Academy located at the Oklahoma City Mike Monroney Aeronautical Center, is designed to identify, as early as possible, air traffic control specialists who do not demonstrate sufficient potential to perform at radar tasks at the journeyman level. An extensive initial validation effort involving design evaluation, implementation evaluation, and formative evaluation was performed to determine if the system was adequately designed from an educational point of view, if the measures employed were reliable, if the program had a proper concurrent relationship with nonradar Academy measures, and if the difficulty level was appropriate. While the program was not pass/fail during the study, a score of less than 70 was used to calculate experimental pass/fail rates. Data from the initial validation effort indicated that the system was educationally sufficient, reliabilities were low to moderate, the RTF program had a proper concurrent relationship with nonradar measures, and the difficulty level was approximately correct. Information from data collected appeared to be asymptoting, and it was recommended that the program could begin pass/fail. The data for this study were collected prior to the air traffic control specialist's strike, and following the strike the Academy radar phase was sequenced out of the basic training curriculum to a later point (after the developmental ATCS had successfully checked out at the field facility in a nonradar position).

AN (1) AD-A133 373/XAG

FG (2) 210700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Engine Performance Comparison Associated with Carburetor Icing during Aviation Grade Fuel and Automotive Grade Fuel Operation.

DN (9) Final rept. Jan-Jul 82

AU (10) Cavage,William

Newcomb,James

Biehl,Keith

RD (11) May 1983

PG (12) 119 Pages

RS (14) DOT/FAA/CT-82/110

RC (20) Unclassified report

DE (23) *Carburetors, *Ice formation

Aircraft engines, Operation, Performance(Engineering), Measurement, Test facilities

ID (25) Light aircraft, LPN-FAA-184-320-120

AB (27) A comprehensive sea-level-static test cell data collection and evaluation effort to review operational characteristics of 'off-the-shelf' carburetor ice detection/warning devices for general aviation piston engine aircraft during operation on aviation grade fuel and automotive grade fuel. Presented herein are results, observations and conclusions drawn from over 250 hours of test cell engine operation on 100LL aviation grade fuel, unleaded premium and unleaded regular grade automotive fuel. Sea-level-static test cell engine operations were conducted utilizing a Teledyne Continental Motors O-200A engine and a Cessna 150 fuel system to review engine operational characteristics of 100LL aviation grade fuel and various blends of automotive grade fuel as well as carburetor ice detectors/warning devices sensitivity/effectiveness during actual carburetor icing. The primary purpose of test cell engine operation was to observe real-time carburetor icing characteristics associated with possible automotive grade fuel utilization by piston-powered light general aviation aircraft. In fulfillment of this task, baseline engine operations were established with 100LL aviation grade fuel followed by various blend of automotive grade fuel prior to imposing carburetor icing conditions and assessing operational characteristics. (Author)

AN (1) AD-A135 674/XAG

FG (2) 040200

050100

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Establishment and Discontinuance Criteria for Automated Weather Observing Systems (AWOS).

DN (9) Final rept.

AU (10) Keech,W. L.

RD (11) May 1983

PG (12) 168 Pages

RS (14) FAA-APO-83-6

RC (20) Unclassified report

DE (23) *Weather stations, *Cost analysis, *Life cycle costs

Cost effectiveness, Benefits, Requirements, Air traffic control systems, Automation, Observation, Policies, Standards, Resource management, Terminal flight facilities, Investments, Budgets, Civil aviation, Data bases, Meteorological data

ID (25) AWOS(Automated Weather Observing Systems)

AB (27) This report develops establishment and discontinuance criteria for automated weather observing systems (AWOS) for publication in FAA Order 7031.2B, Airway Planning Standard Number One. Airway Planning Standard Number One contains the policy and summarizes the criteria used in determining eligibility of terminal locations for establishment, discontinuance and improvements of air navigation facilities and air traffic control services. The criteria developed in this report are based on rigorous life-cycle cost effectiveness and benefit/cost analyses of AWOS which measure weather and environmental parameters essential to FAA operations--wind direction and speed, temperature and dew point, altimeter setting, ceiling, visibility, precipitation and thunderstorm activity. (Author)

AN (1) AD-A144 495/XAG

FG (2) 010500

050300

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Investment Criteria for Airport Surveillance Radar, Air Traffic Control Radar Beacon System, and Automated Radar Terminal System (ASR/ATCRBS/ARTS).

DN (9) Final rept.

AU (10) Keech,W. L.

RD (11) May 1983

PG (12) 111 Pages

RS (14) FAA-APO-83-5

RC (20) Unclassified report

DE (23) *Airport radar systems, *Terminal flight facilities, *Cost analysis

Air traffic control systems, Radar beacons, Automation, Budgets, Benefits, Planning, Investments, Life cycle costs, Screens(Displays), Airport control towers, Civil aviation, Delay, Instrument flight, Surveillance

ID (25) ASR(Airport Surveillance Radar), ATCRBS(Air Traffic Control Radar Beacon System), ARTS(Automated Radar Terminal System), AN/ASR-9, TRACAB(Terminal Radar Approach Control in tower Cab), TRACON(Terminal Radar Approach Control)

AB (27) This report develops revised investment criteria for Airport Surveillance Radar, Air Traffic Control Radar Beacon System, and Automated Radar Terminal System (ASR/ATCRBS/ARTS) for publication in FAA Order 7031.2B, Airway Planning Standard Number One. Airway Planning Standard Number One contains the policy and summarizes the criteria used in determining eligibility of terminal locations for establishment, discontinuance and improvements of air navigation facilities and air traffic control services. The investment criteria addressed in this report include ASR establishment, ASR discontinuance, ASR improvements, remote radar bright display scope, establishment of terminal radar approach control in tower cab (TRACAB), establishment of terminal radar approach control (TRACON) and TRACAB to TRACON conversion. ASR/ATCRBS/ARTS benefits quantified in this report include the value of delay reduction to users and operators of aircraft operating under instrument flight rule conditions and reduced risks of midair and terrain collisions in the terminal area. Life-cycle costs are based on investment, operations and maintenance costs of the ASR-9 in TRACAB and TRACON configurations.

AN (1) AD-A166 423/XAG

FG (2) 010600

050900

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) U.S. Civil Airmen Statistics. 1982

AU (10) Carter,Patricia W.

RD (11) 31 May 1983

PG (12) 43 Pages
RC (20) Unclassified report
DE (23) *MEDICAL EXAMINATION, *STATISTICAL DATA, *PILOTS, *CIVIL AVIATION TABLES(DATA), AIR TRANSPORTATION, AIR TRAFFIC CONTROLLERS, HEALTH SURVEYS, GLIDERS, AIRCRAFT, OPERATORS(PERSONNEL), FLIGHT, INSTRUCTORS, HELICOPTERS, INSTRUMENTATION, RATINGS, STATISTICS, ENGINEERS, FLIGHT CREWS, NAVIGATORS, OKLAHOMA, URBAN AREAS

ID (25) Certification, Lighter than air
AB (27) The U.S. Civil Airmen statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active Airmen is one who holds both an airmen certificate and a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots, control tower operators, flight navigators, flight engineers, and flight instructors. Keywords: Certificates held; Nonpilot; Private; Commercial; Student; Airline transport; Glider; Helicopter; Lighter-than-air; Instrument ratings; Flight instructors; Pilot certificates issues; Tables(data).

AN (1) AD-A128 687/XAG

FG (2) 010500
010600
050200
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION SECURITY

TI (6) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program, July 1-December 31, 1982.

DN (9) Recurring rept.
RD (11) 07 Apr 1983
PG (12) 45 Pages
RS (14) DOT/FAA-ACS-82-17
RC (20) Unclassified report
DE (23) *Civil aviation, *Security, *Reports

Congress, Public safety, Cost effectiveness, Passenger aircraft, Passengers, Aircraft hijacking, Sabotage, Aviation safety, Threat evaluation, Operational effectiveness, Airports, International

airports, Commercial aviation
ID (25) Passenger screening, Bomb threats
AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program.

AN (1) AD-A128 784/XAG

FG (2) 050600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Three Studies of Biographical Factors Associated with Success in Air Traffic Control Specialist Screening/Training at the FAA Academy

AU (10) VanDeventer, Allan D.
Taylor, Deborah K.
Collins, William E.
Boone, James O.

RD (11) Apr 1983

PG (12) 19 Pages

RS (14) FAA-AM-83-6

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Training
Scoring, Education, Regression analysis, Variables

ID (25) Biographical variables, LPN-FAA-AM-C-81/82-PSY-74,
LPN-FAA-AM-C-80/81/82-PSY-66

AB (27) The current Air Traffic Control Specialist (ATCS) selection procedure requires that all applicants pass the Office of Personnel Management (OPM) air traffic control aptitude test. In addition to the test scores, applicants may also receive points for certain types of aviation-related prior experience or substitute college-level education in lieu of general experience requirements. The Civil Aeromedical Institute (CAMI) has had a long-standing involvement in efforts to update and improve ATCS students are given an opportunity to voluntarily take a battery of research tests upon arrival at the FAA Academy for basic training. Included in this battery is a Biographical Questionnaire (BQ) designed to elicit responses about background experiences, including high school education and activities, college education, military experience, and pre-FAA ATC experience. After a new pass/fail training program was implemented at the Academy in 1976, biographical data on trainees were examined to determine the

relationship between biographical variables and Academy success rates. A new set of 21 questions was added to the BQ in May 1980, and responses to the revised BQ were analyzed to determine the underlying factor structure of the questionnaire and the relationship of those factors to success or failure at the Academy. Further research examined the relationship between various types of military experience and performance at the Academy.

AN (1) AD-A128 931/XAG

FG (2) 120600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORTS

PROGRAMS

TI (6) Advanced Automation System (AAS) Transition Strategy

AU (10) Zellweger, Andres G.

RD (11) Apr 1983

PG (12) 39 Pages

RS (14) DOT/FAA/AP-83/1

RC (20) Unclassified report

DE (23) *Air traffic control systems

Control centers, Airport control towers, Operation, Transitions, Electronic equipment, Data processing equipment, Replacement, Planning

ID (25) *AAS(Advanced Automation System)

AB (27) The Advanced Automation System comprises all of the automation equipment required for Air Traffic Control at the Area Control Facilities and Air Traffic Control Towers to accommodate the ATC evolution of the 1990 - 2010 era. This report describes the strategy and supporting rationale for transitioning from today's automation system to the Advanced Automation System. The approach presented here forms the basis for much of the Advanced Automation Program planning and is reflected in the detailed transition, facility modernization, test, training, and budget planning. (Author)

AN (1) AD-A129 007/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of Precision Approach Path Indicator (PAPI).

DN (9) Final rept. Jan 80-Sep 82

AU (10) Castle, Bret

RD (11) Apr 1983

PG (12) 82 Pages

RS (14) DOT/FAA/CT-82/153

RN (18) DOT/FAA/RD-82/85

RC (20) Unclassified report

DE (23) *Landing aids, *Approach indicators, *Glide path systems, *Glide slope, *Performance tests

Flight testing, Position(Location), Environmental tests, Photometry, Operational effectiveness, Comparison, Angle of arrival, Colors, Paths, Passive systems, Pilots, Human factors engineering, Requirements, Test and evaluation, Precision

ID (25) VASI(Visual Approach Slope Indicator), LPN-FAA-081-502-510

AB (27) This report describes the evaluation of the Precision Approach Path Indicator (PAPI) to determine whether the PAPI provides sufficient advantages over the current standard red/white Visual Approach Slope Indicator (VASI) to warrant recommending it as the United States standard visual glidepath indicator. This process covered photometric testing, environmental testing, and flight evaluation. Various flight evaluations were accomplished at the FAA Technical Center (ACY), Newark Airport, New Jersey (EWR), Teterboro Airport, New Jersey (TEB), and at bader Field in Atlantic City, New Jersey (AIY). The results indicate that PAPI was preferred over the standard red/white VASI system. In general, United States pilots find very little fault with the standard red/white VASI system, and the PAPI is preferred mainly because it gives more rate and position information and because of its quick transitions from one color to the other. It is passive system (no moving parts to wear out), meeting all of the operational requirements of a glide slope system, and requires less equipment and real estate than the standard VASI.

AN (1) AD-A129 017/XAG

FG (2) 010200

010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Traffic Alert and Collision Avoidance System (TCAS) Evaluation. Volume II. Equipped Threat Phase and an Assessment in an Error-Degraded Environment.

DN (9) Final rept. Nov 81-Jan 82

AU (10) Billmann, Barry R.

RD (11) Apr 1983

PG (12) 56 Pages

RS (14) DOT/FAA/CT-82/52-2

RN (18) DOT/FAA/RD-82/30-2
RC (20) Unclassified report
NO (21) See also Volume 1, AD-A118 256.
DE (23) *COLLISION AVOIDANCE, *AIRBORNE WARNING AND CONTROL SYSTEM,
*LOGIC,
*THREATS
FLIGHT TESTING, ERRORS, DEGRADATION, DEFICIENCIES, CORRECTIONS,
SCENARIOS, FLIGHT SIMULATION, MISS DISTANCE, SURVEILLANCE
ID (25) TCAS(Traffic Alert and Collision Avoidance System), Equipped threats,
FTEG(Fast Time Encounter Generator), Equipped aircraft,
LPN-FAA-052-243-340
AB (27) This report presents the results of certain aspects of Traffic Alert
and Collision Avoidance System (TCAS) logic testing. It represents the
second volume in a series of three reports. The report presents the
results of analysis of both simulation and flight testing of the TCAS
logic. The analysis was conducted between November 1981 and January
1982, at the Federal Aviation Administration Technical Center. The new
TCAS logic significantly improved the resulting separation during
encounters with TCAS equipped threats. Simplified command coordination
procedures have increased command coordination reliability. Some minor
logic modifications have been identified to further enhance TCAS logic
performance for TCAS equipped threats. The performance of the logic in
the presence of reduced surveillance link reliability was also
analyzed. The link reliability level required to affect adequate
resolution and separation was identified. This analysis was conducted
in a measurement error-degraded environment. Review of flight test
results indicate surveillance link reliability exceeds that required to
affect adequate separation performance. (Author)

AN (1) AD-A130 073/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Identification of Exit Taxiways (Retroreflective Markers Only).
DN (9) Final rept. Mar 81-Oct 82
AU (10) Hackler, Larry W.
RD (11) Apr 1983
PG (12) 35 Pages
RS (14) DOT/FAA/CT-83/5
RN (18) DOT/FAA/RD-82/91
RC (20) Unclassified report
DE (23) *Markers, *Retroreflectors
Runways, Exits, Taxiways, Identification, Visual aids

ID (25) LPN-FAA-081-502-540
AB (27) The purpose of the exit taxiway lighting is to enable the pilot to
expeditiously exit from the runway to a taxiway. There is evidence that
this has not been satisfactorily accomplished by the present lighting
for short-radius exit taxiways. This report evaluated the use of
surface retroreflective markers for identifying short-radius exit
taxiways at night. The markers are intended for locations where the
cost of inset centerline lighting cannot be justified. The results
indicate that there was an improvement in the pilots ability to
identify the exit taxiway associated with the exit-taxiway
retroreflectors. The results also show that the retroreflectors should
be placed on an arc from near the runway centerline to the taxiway
centerline using a cord spacing of 12.5 feet (4 meters). (Author)

AN (1) AD-A130 198/XAG
FG (2) 010600
131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) Crashworthiness: An Illustrated Commentary on Occupant Survival in
General Aviation Accidents
AU (10) Kirkham, William R.
Wicks, S. Marlene
Lowrey, Donald Lee
RD (11) Apr 1983
PG (12) 41 Pages
RS (14) FAA-AM-83-8
RN (18) FAA-AM-83-8
RC (20) Unclassified report
DE (23) *CRASHWORTHINESS
SURVIVAL(PERSONNEL), AVIATION SAFETY, AIRCRAFT EQUIPMENT,
HARNESSES,
AIRCRAFT SEATS, RESTRAINT
ID (25) LPN-FAA-AM-B-83-TOX-45
AB (27) This report is an illustrated commentary on crash survival in general
aviation aircraft. Photographs, drawings, and discussion present some
basic concepts of crash forces; mechanisms of injury to occupants; and
the roles of shoulder harnesses, lapbelts, and seats in attenuating
crash forces. Findings in a number of accidents relate seats and
restraints to the fate of the occupants. The report is designed to
inform the reader of the value of good restraints in crashes of general
aviation aircraft. Also it will serve to orient Federal Aviation

Administration (FAA) personnel and others to a set of projection slides that may be used wholly or in part in safety presentations to pilots and aviation groups. The projection slides, duplicates of the photographs and drawings in this report, are available from the Aeromedical Education Branch of the FAA Civil Aeromedical Institute.

AN (1) AD-A132 293/XAG

FG (2) 130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM
ENGINEERING AND
MAINTENANCE SERVICE

TI (6) State of the Art Survey on Confined Base Courses for Utility Airport Pavements

DN (9) Final rept.

AU (10) McLaughlin, Aston L.

RD (11) Apr 1983

PG (12) 31 Pages

RS (14) DOT/FAA/PM-83/24

RC (20) Unclassified report

DE (23) *Pavements

Runways, Bases(Structures), Soils, Sand, Confinement(General),
Stabilization, Membranes, Cells, Asphalt

ID (25) Pavement bases, LPN-FAA-082-520

AB (27) The report reviews the state-of-the-art in the use of confining methods for loose on-site materials as a stabilizing medium for utility airport pavements. Much field experimentation on expedient types of pavements is in progress by some Federal and State agencies, but a theoretical base has not yet been developed for predicting performance. It is shown that well developed specifications exist for membrane encapsulated soil layer systems, but none exists for sand-filled cellular systems. Present experimentation points to certain problems that must be corrected before sandfilled systems can be used for civil aircraft pavements. Recommendations are offered that could provide a predictive methodology. (Author)

AN (1) AD-A133 221/XAG

FG (2) 010300

061100

110800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Inhalation Toxicology. 3. Evaluation of Thermal Degradation Products from Aircraft and Automobile Engine Oils, Aircraft Hydraulic Fluid, and Mineral Oil

AU (10) Crane, Charles R.

Sanders, Donald C.

Endecott, Boyd R.

Abbott, John K.

RD (11) Apr 1983

PG (12) 19 Pages

RS (14) FAA-AM-83-12

RC (20) Unclassified report

NO (21) See also Parts 1/2, AD-A043 646.

DE (23) *Toxicology, *Inhalation, *Toxicity, *Combustion products, *Carbon monoxide, *Hydraulic fluids, *Aircraft engine oils
Smoke, Lubricating oils, Mineral oils, Degradation, Contamination, Aviation safety, Aircraft cabins, Exposure(Physiology), Rats, Thermal degradation, Aircraft equipment, Bleed systems, Response(Biology), Reaction time, Tables(Data)

AB (27) A malfunctioning seal in the gear-reduction box of a turboprop aircraft engine could allow oil to enter the turbine's compressor section, which is the source of bleed air used to pressurize the cabin. Oil, or its degradation products, could have a deleterious effect on crew and passengers. A series of tests sponsored by the National Transportation Safety Board had examined the possibility that contaminated bleed air might contain toxic products identifiable by chemical analysis, but none of the gases for which they analyzed were present in toxic concentrations. However, the approach did not eliminate the possible presence of an additional component with significant animal toxicity. The research reported here examined the toxicity of thermal degradation products from aircraft lubricating oils and some related products. Rats were exposed to smoke from these products and relative toxicity evaluated in terms of time-to-incapacitation and time-to-death. The carbon monoxide (CO) content of the smoke was measured and this information, in conjunction with the animal response times, was the basis for concluding that the decomposition of these oils did not produce any chemical species, other than CO, in quantities sufficient to contribute to the total toxicity.

AN (1) AD-A138 699/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Installation, Validation, and Flight Evaluation of the Federal Aviation

Administration's Head-Up Display System.

DN (9) Final rept.
AU (10) Scott, B. C.
Masters, C. O.
Ryan, J. J.
Brazer, A. T.
Bray, R. S.
RD (11) Apr 1983
PG (12) 187 Pages
RS (14) DOT/FAA/CT-82/92
RN (18) DOT/FAA/PM-83/5
RC (20) Unclassified report
DE (23) *Head up displays, *Instrument flight, *Flight testing
Cockpits, Display systems, Aircraft equipment,
Performance(Engineering), Human factors engineering, Aviation safety,
Man machine systems, Test and evaluation
ID (25) Electronic aircraft displays
AB (27) This report documents selected activities and results associated with
the installation, validation, and flight evaluation of an FAA-owned
Head-Up Display (HUD) research system as installed in a Boeing 727-100
FAA aircraft. Requisite installation, boresight, and flight validation
activities, along with results obtained from a combined flight
experience/flight evaluation exercise employing government pilots are
presented. Pilot comments addressing HUD system performance, display
symbology, control law responses, hardware implementation, and
operational modes are addressed. The HUD, a one-of-a-kind flightpath
oriented research HUD, was evaluated in both an inertial (INS)
referenced mode and an airmass (AM) referenced mode. Overwhelmingly,
there was a strong preference for the INS referenced HUD mode. (Author)

AN (1) AD-A193 533/XAG

FG (2) 170703
120500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Methods and Measurements in Real-Time Air Traffic Control System
Simulation.

DN (9) Technical note
AU (10) Buckley, Edward P.
DeBaryshe, B. D.
Hitchner, Norman
Kohn, Preston
RD (11) Apr 1983

PG (12) 174 Pages
RS (14) DOT/FAA/CT-83/26
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *COMPUTERIZED SIMULATION
AIR TRAFFIC, CONTROL, DENSITY, DYNAMICS, EXPERIMENTAL DESIGN,
FACTOR
ANALYSIS, GEOMETRY, HUMAN FACTORS ENGINEERING, MEASUREMENT,
MISSIONS,
REAL TIME, RELIABILITY, SIMULATION, TRAFFIC
AB (27) The major purpose of this work was to assess dynamic simulation of air
traffic control systems as a technique for evaluating such systems in a
statistically sound and objective manner. A large set of customarily
used measures based on the system mission of safe expeditious movement
of air traffic was collected by the computer generating the simulated
traffic. The measures were collected during 1-hour simulation
exercises. These measures were applied in two experiments involving
controllers performing traffic control in single en route sectors, with
coordination with simulated adjacent sectors. Two experiments having
many replications were conducted. In addition to studying the
characteristics of the set of measurements, a second aim of the first
experiment was to determine the effect on the measurements of
surrounding circumstances, specifically sector geometry and traffic
density. The results of this experiment led to a decision to conduct a
much less complex experiment, confined to only one sector and geometry
but with more repetitions of 1-hour runs under the same circumstances.
This enabled an examination of the use of aggregation of data to
improve reliability and the execution of a factor analysis in order to
reduce and simplify the set of measures. Keywords: Real time, Human
factors, Experimental design experimental analysis.

AN (1) AD-A128 640/XAG

FG (2) 120300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) A Study of Bird Ingestions Into Large High Bypass Ratio Turbine
Aircraft Engines.

DN (9) Interim rept. May 81-Apr 82
AU (10) Frings, Gary
RD (11) Mar 1983
PG (12) 60 Pages
RS (14) DOT/FAA/CT-82/144
RC (20) Unclassified report
DE (23) *Ingestion(Engines), *Bird strikes, *Aircraft engines, *Statistical

data

High bypass turbofans, Damage assessment, Fan blades, Turbines, Birds, Weight, Tables(Data), Data bases

ID (25) LPN-FAA-182-320-100

AB (27) A 1-year study has been conducted to document the numbers, weights, and species of birds being ingested into large high bypass ratio aircraft turbine engines. This study will continue into a second year. This interim report presents the findings to date. (Author)

AN (1) AD-A128 890/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Crash Injury Protection in Survivable Air Transport Accidents - United States Civil Aircraft Experience from 1970-1978.

DN (9) Final rept. Apr 79-Apr 80

AU (10) Chandler, Richard F.

Pollard, Donell W.

Neri, Lawrence M.

Caiafa, Caesar A.

RD (11) Mar 1983

PG (12) 133 Pages

RS (14) DOT/FAA/CT-82/118

RC (20) Unclassified report

DE (23) *Aviation accidents, *Crash injuries, *Air transportation, *Data bases Protection, Inflight, Ground level, Death, Rates, Comparison, Aircraft seats, Restraint, Tables(Data)

AB (27) This report reviews 27 survivable ground accidents and 3 in-flight accidents occurring from 1970 through 1978. Twenty-five of the ground accidents and all of the in-flight accidents involved reports of seat or restraint performance. Comparisons of injury and fatality rates are made with studies involving earlier model aircraft accidents.

AN (1) AD-A129 167/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Helicopter Noise Survey at Selected New York City Heliports

AU (10) Rickley, E. J.

Brien, M. J.

Albersheim, Steven R.

RD (11) Mar 1983

PG (12) 78 Pages

RS (14) FAA-EE-83-2

RC (20) Unclassified report

DE (23) *Aircraft noise

Urban areas, New York City(New York), Heliports, Helicopters, Approach, Aircraft landings, Takeoff, Acoustic measurement, Surveys

ID (25) *Helicopter noise

AB (27) The FAA conducted a noise measurement survey of helicopter operations at three principal heliports in the borough of Manhattan in New York City on November 16-17, 1982. The purpose was to gather needed information for defining noise problems with in-service helicopter operations within urban areas. These noise data will be used to further define the environmental problems associated with helicopter operations in urban areas. Statistical community noise level data, measured over an 8-hour period at each selected site, are provided which reflect the noise levels at these sites from all local sources during that particular day. Noise data from individual helicopter operations are also provided. These data from helicopter targets of opportunity are termed survey data as opposed to controlled test data in order to reflect the limited control over factors which contribute to the variability of the measured noise level. Noise data are presented for the Augusta A-109, Bell 47J, Bell 206L, Bell 222, Boelkow B-105, and Sikorsky S-76. (Author)

AN (1) AD-A124 611/XAG

FG (2) 010600

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) FAA Aviation Forecasts - Fiscal Years 1983-1994.

RD (11) Feb 1983

PG (12) 80 Pages

RS (14) FAA-APO-83-1

RC (20) Unclassified report

AL (22) Availability: Superintendent of Documents, GPO, Washington, DC 20402 HC \$5.00. Microfiche furnished to DTIC (and NTIS) users.

DE (23) *Civil aviation, *Air traffic, *Forecasting, *Economic analysis

Planning programming budgeting, Management planning and control, Economics, Growth(General), Energy conservation, Econometrics, Airports, Consumers, User needs, Commercial aviation, United States Government, Military operations

AB (27) This report contains the Fiscal Years 1983-1994 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public. The overall outlook for the forecast period is for moderate economic growth, relatively stable real fuel prices, and decreasing inflation. Based upon these assumptions, aviation activity is forecast to increase by Fiscal Year 1994 by 97 percent at towered airports, 50 percent at air route traffic control centers, and 54 percent in flight services performed. Hours flown by general aviation is forecast to increase 56 percent and helicopter hours flown 80 percent. Scheduled domestic revenue passenger miles (RPM's) are forecast to increase 81 percent, with scheduled international RPM's forecast to increase by 80 percent and commuter RPM's forecast to increase by 220 percent.

24

AN (1) AD-A132 646/XAG

FG (2) 010600

050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PLANS

TI (6) FAA Forecast Conference Proceedings (8th) Held at Arlington, Virginia on 24 February 1983.

DN (9) Annual rept.

RD (11) Feb 1983

PG (12) 85 Pages

RS (14) FAA-APO-83-7

RC (20) Unclassified report

DE (23) *Civil aviation, *Symposia

Forecasting, Commercial aviation, Aircraft industry, Inflation(Economics), Economic analysis, Methodology, State of the art

AB (27) The Eighth Annual Aviation Forecast Conference was held on February 24, 1983, in Arlington, Virginia. The general theme of the presentation was Aviation-Forecasting: The State of the Art. The speakers addressed the problems associated with and the expectations of aviation forecast methodologies and their impact on the aviation industry. It was

generally agreed that the key problem areas center on economic fluctuations and the need to continue to improve and refine the methodologies used in aviation forecasting.

AN (1) AD-A133 282/XAG

FG (2) 050800

050900

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Job Attitudes Toward the New Maintenance Concept of the Airway Facilities Service

AU (10) Schroeder, David J.

Deloney, Julia R.

RD (11) Feb 1983

PG (12) 82 Pages

RS (14) FAA-AM-83-7

RC (20) Unclassified report

DE (23) *Job satisfaction, *Attitudes(Psychology), *Aviation technicians

Aircraft maintenance, Man machine systems, Automation,

Adjustment(Psychology), Surveys, Questionnaires, Response, Feedback,

Organizations, Operational effectiveness, Skills

ID (25) AAF(Airway Facility Service)

AB (27) To determine the attitudes of Airway Facilities (AF) personnel to the proposed New Maintenance Concept (NMC), an extensive questionnaire was mailed to all employees. Of 11,569 questionnaires distributed, 6,976 were completed and returned. Responses to the NMC questions were analyzed with respect to employee characteristics, job satisfaction measures, shift work, and general health variables. This report summarizes the findings from the NMC questionnaire and provides a technical documentation of the completed study. However, regular consultation with Airway Facilities Service (AAF) officials was conducted throughout the data analyses period for use in management decisions regarding this developing concept. Also, although the functions of AAF were formally assumed by the Systems Engineering Service (AES) and Program Engineering and Maintenance Service (APM) in a reorganization effective October 4, 1982, the older designation (AAF) will be used throughout this report.

AN (1) AD-A172 700/XAG

FG (2) 010500

090100
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC PROGRAM
ENGINEERING AND
MAINTENANCE SERVICE

TI (6) Siting Criteria for the Microwave Landing System (MLS).

DN (9) Final rept.

AU (10) Hom,Thomas
Laginja,Thomas J.

RD (11) Feb 1983

PG (12) 36 Pages

RS (14) DOT/FAA/PM-83-2

RC (20) Unclassified report

DE (23) *MICROWAVE ANTENNAS, *SITE SELECTION

AIRPORTS, MICROWAVE LANDING SYSTEMS, ELECTROMAGNETIC
INTERFERENCE,

MULTIPATH TRANSMISSION, ELECTROMAGNETIC WAVE REFLECTIONS,
SHADOWS

AB (27) This report provides guidance in the selection of locations on an airport for installation of MLS antennas. A description of the operation of the Microwave Landing System (MLS) is given and the preferred locations for MLS antennas are described. A discussion of possible interference effects due to reflecting and shadowing objects is presented. Techniques for determining potential interference sources are given.

AN (1) AD-A124 582/XAG

FG (2) 050600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) The Measurement of Pilot Workload.

DN (9) Interim rept.

AU (10) Stein,Earl S.
Rosenberg,Bruce L.

RD (11) Jan 1983

PG (12) 55 Pages

RS (14) DOT/FAA/CT-82/23

RN (18) DOT/FAA/EM-81/14

RC (20) Unclassified report

DE (23) *Work measurement, *Pilots, *Flight simulation

Perception, Reaction time, Questionnaires, Clearances, Air traffic control systems, Turbulence, Inflight, Emergencies, Flight simulators, Cockpits, Flight instruments, Factor analysis

ID (25) Workload, LPN-FAA-161-301-150

AB (27) This current experiment was an attempt to measure workload during flight simulation, using two primary variables: the pilots' own evaluation sampled once per minute with a computer and the latency or delay of that response. This was supplemented by a post-flight questionnaire. Three levels of flight difficulty were established by subject matter experts. These were varied by controlling (1) initial clearance complexity, (2) level of air traffic control, (3) turbulence, and (4) inflight emergency. Flights were conducted in a General Aviation Instrument trainer and 12 pilots participated. Results demonstrated that pilots were willing and able to make inflight workload evaluations which corresponded directly with the induced difficulty level. Response latencies increased in relationship to difficulty, but the intermediate and most difficult flights were not significantly different. Factor analyses of all measures produced two clusters for the easiest and intermediate flights (inflight and postflight) and four for the most difficult flights. In the latter case, inflight and postflight measures separated into two factors and the questionnaire split also into two segments. These separations indicated that within the current state of the art, both types of measures should continue to be collected. Plans call for follow-on research in General Aviation Workload.

AN (1) AD-A126 138/XAG

FG (2) 060500
061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Sensitivity of Some Tests for Alcohol Abuse: Findings in Nonalcoholics
Recovering from Intoxication

AU (10) McKenzie,J. M.
Higgins,E. A.
Fowler,P. R.
Funkhouser,G. E.
White,M. A.

RD (11) Jan 1983

PG (12) 21 Pages

RS (14) FAA-AM-83-2

RC (20) Unclassified report

DE (23) *Alcoholism

Test methods, Sensitivity, Blood chemistry, Males, Ethanol, Physiological effects, Heart rate, Blood pressure, Performance tests,

Cholesterol, Lipids

ID (25) Blood alcohol

AB (27) A variety of measurements are sensitive to alcoholism; some may be applicable to screening programs, but more precise knowledge of sensitivity and specificity would help to select a minimal test battery. This study assessed the sensitivity of some tests for alcoholism to a single drinking episode. Fifteen nonalcoholic men, 26-59 years old, participated. On one evening they drank ethanol, raising their blood alcohol concentrations (BAC's) to 100-200 mg/dl for at least 2h. At 0700 on the next morning, after 7 h of sleep, they ate breakfast, then completed a battery of performance tests. Blood samples were drawn at 0730 and 1130. The effects of alcohol, estimated by comparison of data with those obtained on another morning of the same week after an evening of abstinence, are summarized: Heart rate, during sleep and all the next morning, was higher; blood pressure, at 0700 and 1100, was unaffected. There was no effect on core body temperature, recorded hourly from 2400. The urinary excretion rates of catecholamines and ketogenic adrenal steroids were augmented by alcohol. The drug did not affect blood levels of gamma-glutamyl transpeptidase, glutamate oxaloacetate transaminase, high density lipid or total cholesterol, or uric acid. Performance tests affected by alcohol were number comparison, number addition, analysis of complex statements, and adaptability (from an air traffic controller selection batter). Tests not affected were abstract reasoning, digit code, digit symbol, short-term memory, hand steadiness, pursuit tracking, rod-and-frame, and 100-hue color sorting.

AN (1) AD-A126 551/XAG

FG (2) 050800

060500

061000

061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Some Effects of Smoking Withdrawal on Complex Performance and Physiological Responses

AU (10) Mertens, Henry W.

McKenzie, Jess M.

Higgins, E. Arnold

RD (11) Jan 1983

PG (12) 18 Pages

RS (14) FAA-AM-83-4

RC (20) Unclassified report

DE (23) *Tobacco, *Drug withdrawal

Physiological effects, Performance(Human), Biochemistry, Flight simulation, Performance tests, Males, Females, Monitoring, Tracking, Reasoning, Arithmetic, Problem solving, Flight crews, Reaction time, Excretion, Urine, Hormones, Epinephrine, Levarterenol, Heart rate, Carboxyl groups, Hemoglobin, Carbon monoxide

ID (25) *Smoking withdrawal, Carboxyhemoglobin, LPN-FAA-AM-A-80/81-PHY-123, LPN-FAA-AM-A-80/81/82

AB (27) The effects of smoking withdrawal on complex (time-shared) performance and physiological responses were studied at a simulated aircraft cabin altitude of 6,500 ft. Seventeen habitual smokers, nine women and eight men 23 to 59 years of age, served as subjects. Time-shared performance of monitoring, tracking, mental arithmetic, and problem solving tasks were measured by the Civil Aeromedical Institute (CAMI) Multiple Task Performance Battery (MTPB) in two 4-h test sessions, one in which smoking was permitted at 1/2-h intervals and a no-smoking session. Corollary physiological measurements involved urinary hormones (epinephrine, norepinephrine, and 17-ketogenic steroids), carboxyhemoglobin levels (COHb), and heart rate (HR). Overall composite scores for MTB performance revealed decrements during withdrawal which were statistically significant ($p < .05$) decrement in tracking and a tendency toward longer reaction times in one monitoring task during withdrawal. These performance decrements were associated with significantly lower HR ($p < .001$) and lower ($p < .05$) ratings of attentiveness during withdrawal from smoking. These findings support a cautious approach to the prohibition of smoking on the flight deck for aircrew members. (Author)

AN (1) AD-A127 252/XAG

FG (2) 010300

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CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Braking of an Aircraft Tire on Grooved and Porous Asphaltic Concrete.

DN (9) Final rept.

AU (10) Agrawal, Satish K.

RD (11) Jan 1983

PG (12) 37 Pages

RS (14) DOT/FAA/CT-82/147

RN (18) DOT/FAA/RD-82/77

RC (20) Unclassified report

DE (23) *Braking, *Hydroplaning, *Aircraft tires, *Runways, *Surface roughness
Performance tests, Test equipment, Test methods, Stopping, Asphalt,
Concrete, Grooving, Porosity, Friction, Wetting, Surfaces, Preparation,
Comparison, Experimental data

ID (25) LPN-FAA-082-531-500

AB (27) This report describes an experimental program that investigated the braking and hydroplaning performance of an aircraft tire on asphaltic concrete surfaces having various treatments. The tests were conducted on a dynamic track in the speed range of 70 to 150 knots, and under other operating conditions whose magnitudes represented values widely used by airlines or aircraft. The results show that the type of surface treatment has a significant influence on the braking performance of an aircraft tire on puddled runways, grooves at closure spacings provide higher friction levels. When the runways are wet or flooded the braking capability on all surfaces is either very high or very low, respectively. The braking performance on the reflex-percussive grooves, the porous friction overlay, and the saw-cut grooves spaced at 3 inches is comparable.

AN (1) AD-A127 429/XAG

FG (2) 050900
060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Characteristics of Medically Disqualified Airline Pilots

AU (10) Dark, Shirley J.

RD (11) Jan 1983

PG (12) 18 Pages

RS (14) FAA-AM-83-5

RC (20) Unclassified report

DE (23) *Pilots, *Personnel selection, *Medical examination, *Diseases
Regulations, Health, Standards, Requirements, Employment,
Qualifications, Aging(Physiology), Cardiovascular diseases, Nervous
system diseases, Mental disorders, Statistical analysis

ID (25) Certification, Certification denials, Disqualification

AB (27) Observations on the airline pilot group probably come as close to a true reflection of incidence of disqualifying disease as is possible to observe. Prescreening by airline companies before employment and the stringent Federal Aviation Administration (FAA) requirements for issuance of a first-class medical certificate result in this group being essentially purged of disease prevalence that contributes to higher rates for other groups. Also, because of occupational/economic

reasons, these individuals are less likely to voluntarily remove themselves from followup observation for known medical conditions that would preclude FAA medical certification. Conversely, voluntary attrition is a more frequent occurrence among nonoccupationally connected pilots who recognize that they are not medically qualified and, therefore, are never heard from again by the FAA. Age-specific denial rates for airline pilots increase to the highest rate at age interval 55-59. The most significant causes for denial are cardiovascular, neuropsychiatric, and the miscellaneous category. The importance of these causes for denial, particularly above age 45, is again recognized. Age-cause-specific findings for the airline pilot group follow epidemiologic expectations, with age being a significant variable associated with increased rates. Of interest in the data on denial by employer is that the larger employers, many of which have their own medical facilities, have uniformly lower denial rates than smaller employers. (Author)

AN (1) AD-A127 463/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) Index to FAA (Federal Aviation Administration) Office of Aviation
Medicine Reports: 1961 through 1982

AU (10) Dille, J. Robert
Haraway, Annabelle

RD (11) Jan 1983

PG (12) 79 Pages

RS (14) FAA-AM-83-1

RC (20) Unclassified report

DE (23) *Aviation medicine, *Reports, *Indexes

Acceleration, Aviation accidents, Aging(Physiology), Air traffic
control systems, Aviation safety, Alcoholism, Blood, Physiological
effects, Cardiovascular system, Drugs, Eye, Fatigue(Physiology),
Hearing, Aviation injuries, Pilots, Performance(Human)

AB (27) An index to Office of Aviation Medicine Reports (1964-1982) and Civil Aeromedical Research Institute Reports (1961-1963) is presented as a reference for those engaged in aviation medicine and related activities. It provides a listing of all FAA aviation medicine reports published from 1961 through 1982 by year, number, author, title, and subject.

AN (1) AD-B076 444/XAG

FG (2) 010300

131100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Fire Resistance Tests of Intumescent-Coated Self-Sealing Fuel Lines.

DN (9) Final rept. Jan 79-May 81

AU (10) Boris,Paul

RD (11) Jan 1983

PG (12) 72 Pages

RS (14) DOT/FAA/CT-82/1

CT (15) MIPR-FY1455-80-00605, MIPR-FY1455-81-00601

PJ (16) 3048

TN (17) 07

RN (18) AFWAL-TR-82-2111

RC (20) Unclassified report

AL (22) Distribution limited to U.S. Gov't. agencies and their Contractors;
Specific authority; 23 May 85. Other requests must be referred to Aero
Propulsion Lab. AFWAL GLIST/PO Wright-Patterson AFB, OH 45433.

DE (23) *Self sealing fuel lines, *Water repellents
Coatings, Flammability, Aircraft fires, Fire safety, Aircraft
equipment, Test methods, Gunfire, Armor piercing ammunition

ID (25) *Intumescent coatings, WUAFWAL30480783, PE62203F

AB (27) Tests were conducted on self-sealing fuel lines whose exterior surface
was covered with one of several intumescent coatings. These tests
included subjecting coated lines to simulated in-flight fires and to
.50 Cal AP and API gunfire. The self-sealing material was flammable,
and these tests have shown that the destructive intrusion of a severe
fire can be significantly delayed by using an intumescent coating.
During this test program, the intumescent coatings had no apparent
affect on self-sealing capability of the protected fuel lines when
subjected to .50 Cal AP gunfire.

DL (33) 02

AN (1) AD-P002 201/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Ground Evaluation of an Airborne Lightning Locator System

AU (10) Lewis,W.

Barile,A. J.

Rasch,N. O.

RD (11) 1983

PG (12) 7 Pages

RC (20) Unclassified report

NO (21) This article is from 'International Aerospace and Ground Conference on
Lightning and Static Electricity (8th): 'Lightning Technology Roundup,'
held at Fort Worth, Texas on 21-23 June 1983,' AD-A135 100, p48-1 thru
48-7.

DE (23) *Lightning, *Turbulence
Direction finding, Position(Location), Magnetic fields, Electric
fields, Measurement, Receivers, Radar reflections, S band, E band,
Airborne, Symposia

ID (25) Component reports, *Lightning location, ASR-8 radar

AB (27) In a ground evaluation of an airborne lightning locator system,
lightning stroke rates per 4 minutes were compared with aircraft
turbulence during thunderstorm penetrations. Data were taken on 3
thunderstorm days and summarized mostly into 15-minute periods
consisting of three to four aircraft penetrations. Stroke rates varied
considerably and did not show a linear relationship to aircraft
turbulence. However, when average stroke rates for the 15-minute
periods increased, aircraft turbulence increased and vice versa. It is
concluded that the lightning locator system is a potentially useful
thunderstorm turbulences warning device, but requires further
ground/air testing. (Author)

AN (1) AD-A123 433/XAG

FG (2) 170900

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

TI (6) Use of Radar Position Reports for Estimating Aircraft Acceleration.

DN (9) Final rept.

AU (10) Shannon,James A.

RD (11) Dec 1982

PG (12) 24 Pages

RS (14) DOT/FAA/RD-82/81

RC (20) Unclassified report

DE (23) *Flight speeds, *Acceleration, *Radar, *Monopulse radar
Position(Location), Estimates, Measurement, Computations, Turning
flight, Aviation safety, Air traffic control systems, Collision
avoidance, Flight maneuvers

ID (25) Aircraft acceleration

AB (27) An inquiry was conducted into the possibility of calculating aircraft
acceleration from radar position reports using second differences of
range-bearing data. The analysis shows that data provided by the future
monopulse radar receiver can be sufficiently accurate so that good

estimates of acceleration may be calculated. Observations of a B727 aircraft maneuvering at 425 knots and observed by a present generation radar at a distance of 100-400 nmi were analyzed. Although impractical for the present generation of ground based computer equipment, acceleration estimates will be feasible when the next generation is in place. These estimates should be used with the future monopulse radar. (Author)

AN (1) AD-A124 539/XAG

FG (2) 010300

131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) In-Flight Aircraft Seat Fire Extinguishing Tests (Cabin Hazard Measurements).

DN (9) Final rept. Jun-Dec 81

AU (10) Hill, Richard G.
Speitel, Louise C.

RD (11) Dec 1982

PG (12) 47 Pages

RS (14) DOT/FAA/CT-82/111

RC (20) Unclassified report

DE (23) *Aircraft cabins, *Aircraft seats, *Aircraft fires

Fire extinguishers, Fire extinguishing agents, Hazards, Toxic agents, Poisonous gases, Carbon dioxide, Water

ID (25) Inflight fires, Cabin hazard, Halon 1211, Monammonium phosphate, LPN-FAA-181-350-430

AB (27) This report describes the results of a test program designed to: determine the amount of toxic decomposition byproducts from the use of Halon 1211 on large seat fires in an aircraft cabin while in flight; compare relative hazard levels from the use of common aircraft hand-held extinguishers (Halon 1211, monammonium phosphate, carbon dioxide, water) on large fire in an aircraft cabin while in flight; compare the hazards from the hand-held extinguishers extinguishing a large aircraft seat fire to the hazards of an uncontrolled seat fire. A series of nine tests was conducted during this project. Two tests each were conducted using Halon 1211, dry powder (monammonium phosphate), water and CO2 extinguishers, and one test in which the seat fire was allowed to burn uncontrolled. Hazard level measurements were taken during all tests, they included heat, smoke, and toxic gas measurements. It was concluded that Halon 1211 can be effectively and safely utilized to extinguish a severe seat fire in a transport passenger cabin. (Author)

AN (1) AD-A124 568/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of Wind-Driven Retroreflective Taxiway Edge Markers.

DN (9) Final rept. Apr-Aug 82

AU (10) Brown, Guy S.

RD (11) Dec 1982

PG (12) 18 Pages

RS (14) DOT/FAA/CT-82/131

RN (18) DOT/FAA/RD-82/80

RC (20) Unclassified report

DE (23) *Visual aids, *Taxiways, *Runways

Reflectors, Markers, Manual operation, Wind, Rotation, Aviation safety, Airports, Taxiing, Edges, Hazards, Navigational aids

ID (25) Wind driven edge markers, Retroreflective markers, LPN-FAA-081-502-580

AB (27) An innovative taxiway edge retroreflective marker, designed to rotate when there is sufficient wind, was evaluated to determine whether the markers would provide adequate visual guidance at night while rotating and when stationary, and whether the innovative rotating feature adds to or detracts from the guidance value. The markers consist of a plastic can or cylinder, 6 1/4 inches by 8 inches tall, mounted on plastic Polyvinyl Chloride (PVC) pipe. Wind collector vanes on the cylinder are used to rotate the cylinder when winds are above approximately 8 knots. Light is reflected at night from retroreflective bands of yellow and blue material and from glass beads imbedded in the painted material. The retroreflective bands of material are staggered vertically producing motion or movement both when rotating horizontally and vertically. The test results concluded that the wind-driven edge markers adequately define the taxiway and provided adequate visual guidance for taxiing while the markers were stationary and when rotating during daylight hours and at night.

AN (1) AD-A124 595/XAG

FG (2) 010309

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT

SYSTEMS

TI (6) General Aviation Activity and Avionics Survey 1981.

DN (9) Annual summary rept. for CY 1981.

AU (10) Schwenk, Judith C.
Carter, Patricia W.
RD (11) Dec 1982
PG (12) 110 Pages
RS (14) FAA-MS-82-5
RC (20) Unclassified report
DE (23) *CIVIL AVIATION, *AVIONICS, *SURVEYS, *COMMERCIAL AIRCRAFT
STATISTICAL ANALYSIS, TABLES(DATA), FLIGHT, TIME STUDIES, UNITED
STATES, AIRCRAFT ENGINES, AIRCRAFT EQUIPMENT, FUEL CONSUMPTION,
AIRFRAMES, CLASSIFICATION
ID (25) Avionics surveys, Flight time
AB (27) This report presents the results and a description of the 1981 General
Aviation Activity and Avionics Survey. The survey was conducted during
1982 by the FAA to obtain information on the activity and avionics of
the United States registered general aviation aircraft fleet, the
dominant component of civil aviation in the U.S. The survey was based
on a statistically selected sample of about 8.9 percent of the general
aviation fleet and obtained a response rate of 61 percent. Survey
results are based upon response but are expanded upward to represent
the total population. Survey results revealed that during 1981 an
estimated 40.7 million hours of flying time were logged by the 213,226
active general aviation aircraft in the U. S. fleet, yielding a mean
annual flight time per aircraft of 188.1 hours. The active aircraft
represented about 83 percent of the registered general aviation fleet.
The report contains breakdowns of these and other statistics by
manufacturer/model group, aircraft type, state and region of based
aircraft, and primary use. Also included are fuel consumption, lifetime
airframe hours, avionics, and engine hours estimates. In addition,
tables are included for detailed analysis of the avionics capabilities
of GA fleet.

AN (1) AD-A125 459/XAG
FG (2) 010300
250200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Global Positioning System En Route/Terminal Exploratory Tests.
DN (9) Final rept. Mar 81-Feb 82
AU (10) Connor, Jerome T.
Esposito, Robert J.
Lizzi, Philip
RD (11) Dec 1982
PG (12) 123 Pages

RS (14) DOT/FAA/CT-82/64
RN (18) DOT/FAA/RD-82/71
RC (20) Unclassified report
DE (23) *Global positioning system, *Radio receivers
Accuracy, Reliability, Acquisition, Navigational aids,
Performance(Engineering), Civil aviation, Flight maneuvers, Plotting,
Orbits, Flight paths, Flight simulation, Flight testing
ID (25) NAVSTAR global positioning systems, Z sets, Single channel receivers,
Responsiveness, Acquisition, LPN-FAA-049-311-110
AB (27) The report documents the performance of the Z-set in the laboratory and
during different flight profiles including rectangles, orbits, radials,
nonprecision approaches, and area en route flights to the Philadelphia,
Dulles, Norfolk, Wilmington, and John F. Kennedy Airports during
periods when up to five satellites were visible to the antenna.

AN (1) AD-A125 920/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Evaluation of Supplemental Lights for Caution Bars.
DN (9) Final rept.
AU (10) Hackler, Larry W.
RD (11) Dec 1982
PG (12) 26 Pages
RS (14) DOT/FAA/CT-82/119
RN (18) DOT/FAA/RD-82/79
RC (20) Unclassified report
DE (23) *Navigational lights, *Taxiways
Marker lights, Approach lights, Aircraft landings, Approach, Guidance,
Auxiliary, Position(Location), Area coverage, Horizontal orientation,
Vertical orientation, Intensity, Flashes, Rates, Identification,
Airports
ID (25) Caution bars, Stop bars, Hold bars
AB (27) Caution Bars (stop bars or hold bars) are used to identify taxiway hold
lines and warn pilots of an approaching runway. Caution Bars are
difficult to see when they are covered by snow or sand, or when a
high-cockpit aircraft is at or close to the caution bars. Under these
conditions, supplemental lights (taxi-holding position lights) could
help. This project was to determine the desired characteristics of
horizontal and vertical coverage, intensity, flash rate, and
orientation of the supplemental lights. The results indicated that
these characteristics were acceptable or desired: Horizontal and
vertical coverage: 15 degrees (as shown by photometric data);

Intensity: 30-percent night; 100-percent day (1600 candela light);
Flash rate: 58 flashes/minute (off the shelf equipment); and
Orientation: toe-in 20 degrees toward taxiway pitch-up 10 degrees above
horizon. The results also indicated that the lights would enhance
identification of the taxi-holding position.

AN (1) AD-A125 933/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Evaluation of Retroreflective Pavement Markers for Precision and
Nonprecision Runways.**

DN (9) Interim rept. Mar 81-Jun 82

AU (10) Brown, Guy S.

RD (11) Dec 1982

PG (12) 29 Pages

RS (14) DOT/FAA/CT-82/112

RN (18) DOT/FAA/RD-82/83

RC (20) Unclassified report

DE (23) *Navigational aids, *Retroreflectors, *Markers, *Navigational lights,
*Runways

Visual aids, Taxiways, Pavements, Approach lights, Night landings,
Approach, Guidance, Aviation safety, Rain, Flares, Takeoff, Night
flight, Efficiency

ID (25) LPN-FAA-081-502-520

AB (27) The purpose of this program was to evaluate the use of retroreflective
pavement markers, installed in a configuration duplicating runway
centerline and touchdown zone lighting system of a Category II runway
on Category I or Nonprecision Approach runways with edge lighting to
determine if these retroreflective markers will enhance nighttime
visual guidance to provide increased safety of operations and possible
reduction in minimums, particularly under wet runway conditions. Visual
contact height with the retroreflective pavement marker systems was not
enhanced prior to reaching Minimum Descent Altitude (MDA) or Decision
Height (DH) for nonprecision or Category I approaches respectively;
therefore, this system will not permit the reduction in approach
minimums for Category I precision or nonprecision approaches. However,
the test program demonstrated that the system is effective in improving
the safety of operation for final approach, flare and touchdown,
landing rollout, and for takeoffs. Particularly under rainy, wet
nighttime conditions, the pavement retroreflector significantly
enhanced the visual guidance, supplementing that provided by the
standard runway edge lights and paint markings which are difficult to

see under wet conditions. (Author)

AN (1) AD-A127 133/XAG

FG (2) 120600

250300

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Remote Maintenance Monitoring System Concentrator.

DN (9) Final rept. Apr 81-Jun 82

AU (10) Wainland, David

RD (11) Dec 1982

PG (12) 55 Pages

RS (14) DOT/FAA/CT-82/89

RC (20) Unclassified report

DE (23) *Information systems, *Computer communications, *Data transmission
systems, *Remote systems, *Multiplexing
Electronic switching, Navigational aids, Maintenance, Monitoring, Low
costs, Minicomputers, Configuration management

ID (25) RMMS(Remote Maintenance Monitoring System), Concentrators

AB (27) A Remote Maintenance Monitoring System (RMMS) concentrator has been
designed, developed, and tested at the Federal Aviation Administration
Technical Center. The concentrator is a microcomputer-based device that
collects, stores, displays, and retransmits to a Maintenance Processor
Subsystem, performance information obtained from many remote
navigational aid monitors. The concentrator consists of a
communications subsystem and a data subsystem. Due to its design
features, the concentrator may be reconfigured to handle several RMMS
tasks. By incorporating operating system software into the data
subsystem, the concentrator becomes a low cost, general purpose
minicomputer.

AN (1) AD-A127 248/XAG

FG (2) 050200

050800

050900

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Pilot Performance Measurement: An Annotated Bibliography.

DN (9) Final rept.

AU (10) Rehmann, Jacqueline T.

RD (11) Dec 1982

PG (12) 61 Pages

RS (14) DOT/FAA/CT-82/24
RN (18) DOT/FAA/EM-81/16
RC (20) Unclassified report
DE (23) *Bibliographies, *Performance(Human), *Pilots
Performance tests, Cockpits, Automation, Jobs, Taxonomy, Standards,
Work measurement, Flight simulation, Factor analysis, Data acquisition,
Stress(Psychology), Stress(Physiology), Models, Display systems,
Abstracts, Indexes
ID (25) LPN-FAA-161-301-150

AN (1) AD-A133 161/XAG

FG (2) 010309

010600

050200

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Census of U.S. Civil Aircraft. Calendar Year 1982.

DN (9) Annual rept.

RD (11) 31 Dec 1982

PG (12) 308 Pages

RS (14) FAA-AMS-220

RC (20) Unclassified report

DE (23) *Commercial aircraft, *Transport aircraft, *Civil aviation
Passenger aircraft, Inventory, Surveys, United States, Statistical
data, Tables(Data)

ID (25) Census

AB (27) This report presents information about the U.S. civil aircraft fleet.
It includes detailed tables of air carrier aircraft and an inventory of
registered aircraft by manufacturer and model, and general aviation
aircraft by state and country of the owner. (Author)

AN (1) AD-A138 347/XAG

FG (2) 010500

010600

050200

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1982.

DN (9) Annual rept.

RD (11) 31 Dec 1982

PG (12) 210 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic, *Handbooks

Aviation accidents, Commercial aviation, Statistical data, Airports,
Terminal flight facilities, Passengers, International airports,
Tables(Data), Aeronautics, Air transportation

ID (25) General aviation

AB (27) This report presents statistical information pertaining to the Federal
Aviation Administration, the National Airspace System, Airports,
Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents,
Aeronautical Production and Imports/Exports, and a Glossary of the
terms used in this publication. (Author)

AN (1) AD-A214 696/XAG

FG (2) 081200

010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

**TI (6) Hazards Following Ground Deicing and Ground Operations in Conditions
Conducive to Aircraft Icing.**

DN (9) Advisory circular.

RD (11) 17 Dec 1982

PG (12) 38 Pages

RS (14) FAA/AC-20-117

RC (20) Unclassified report

DE (23) *AIRCRAFT INDUSTRY, *DEICING SYSTEMS, *ICE FORMATION
ACCIDENTS, ACCUMULATION, AERODYNAMIC CHARACTERISTICS, AIRCRAFT,
AIRCRAFT MAINTENANCE, ANTIFREEZES, COMMERCIAL AVIATION,
ENGINEERING,
FLIGHT, FLIGHT CREWS, FLUIDS, FREEZING, GENERAL AVIATION AIRCRAFT,
GROUND LEVEL, GUIDANCE, MANUFACTURING, MILITARY PERSONNEL,
ORGANIZATIONS, PERFORMANCE(ENGINEERING), STANDARDIZATION,
SURFACE

ROUGHNESS, TRANSPORT

AB (27) The purpose of this report is to emphasize the 'Clean Aircraft Concept'
following ground operation in conditions conducive to aircraft icing
and to provide information to assist in compliance. Recent accidents
involving large transport and small general aviation aircraft indicates
that misconceptions exists regarding the effect of slight surface
roughness caused by ice accumulations on aircraft performance and
flight characteristics and the effectiveness of Freezing Point
Depressant (FPD) ground deicing and anti-icing fluids. During
development of information contained herein it was recognized that

guidance information should be directed to all segments of aviation to include aircraft manufacturers; airline engineering, maintenance, service and operations organizations; aircraft maintenance and service personnel; and aircrews of all aircraft types and categories. Information contained herein therefore is general in nature for basic understanding purposes to facilitate development of standardized procedures and guidance by various segments of the aviation industry. (SDW)

AN (1) AD-A123 465/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Loran-C en Route Accuracies in the Central Appalachian Region.

DN (9) Final rept. for period ending Apr 80

AU (10) Lorge, Frank

RD (11) Nov 1982

PG (12) 31 Pages

RS (14) DOT/FAA/CT-82/32

RN (18) DOT/FAA/RD-82/24

RC (20) Unclassified report

DE (23) *LORAN

LOW FREQUENCY, OHIO, KENTUCKY, WEST VIRGINIA, MOUNTAINS, FLIGHT,

LOW

ALTITUDE, RADIO SIGNALS, LEVEL(QUANTITY), POSITION FINDING, ACCURACY, ERRORS, MEASUREMENT, FLIGHT TESTING

ID (25) LORAN C, Appalachian Mountains, LPN-FAA-045-390-130

AB (27) Flight tests were conducted in the central Appalachian Region of the

United States to measure en route Loran-C position accuracies at low

altitudes in mountains terrain. Receivers were configured to use the

Northeast and Great Lakes Chains of Loran-C transmitters during the

flights while position information and receiver status were recorded.

Comparisons were made between each of the recorded Loran positions and

position information derived from the Inertial Navigation System. The

results were compared against Advisory Circular (AC) 90-45A accuracy

criteria for the en route phase of flight. (Author)

AN (1) AD-A123 467/XAG

FG (2) 061000

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND

ENERGY

TI (6) Helicopter Noise Exposure Curves for Use in Environmental Impact Assessment.

DN (9) Final rept.

AU (10) Newman, J. Steven

Rickley, Edward J.

Bland, Tyrone L.

RD (11) Nov 1982

PG (12) 160 Pages

RS (14) DOT/FAA/EE-82-16

RC (20) Unclassified report

DE (23) *Aircraft noise, *Exposure(General), *Environmental impact, *Data bases

Noise pollution, Sound pressure, Helicopters, Data acquisition,

Extrapolation, Data reduction, Contours, Range(Distance), Takeoff,

Airspeed, Approach, Hovering, Planning, Airports, Heliports,

Performance(Engineering), Flight, Tables(Data)

ID (25) Environmental impact assessment

AB (27) This report establishes the current (1982) FAA helicopter noise data

base for use in environmental impact assessment. The report sets out

assumptions, methodologies, and techniques used in arriving at

noise-exposure-versus-distance relationships. Noise data are provided

for 15 helicopters, including five flight regimes each: takeoff,

approach, level flyover, hover in-ground-effect (HIGE) and hover

out-of-ground effect (HOGE). When possible, level flyover data are

presented for a variety of airspeeds. Sound exposure level (SEL) is

provided for all operational modes except hover. In the case of hover

operations (both HOGE and HIGE), the maximum A-Weighted Sound Level

(LAM) is identified as a function of distance. The report also includes

a discussion of helicopter performance characteristics required for

full computer modeling of helicopter/heliport noise exposure. (Author)

AN (1) AD-A125 930/XAG

FG (2) 140200

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Mode S Baseline Radar Tracking.

DN (9) Final rept. Jan-Mar 81

AU (10) Mancus, Edward F.

Baker, Leonard H.

RD (11) Nov 1982

PG (12) 97 Pages

RS (14) DOT/FAA/CT-82/43
RN (18) DOT/FAA/RD-82/53
RC (20) Unclassified report
DE (23) *Radar tracking, *Air traffic control systems, *Test and evaluation
Base lines, Moving targets, Modification, Interfaces, Integration, Data acquisition, Acquisition radar, Flight testing, Target detection, Configurations, Requirements
ID (25) MTD(Moving Target Detector), RDAS(Radar Data Acquisition System), ARTS(Automated Radar Terminal System), MTD-2 radar digitizers
AB (27) Tests and evaluation were conducted to determine the baseline performance characteristics of the Moving Target Detector (MTD) and Radar Data Acquisition System (RDAS) as an integral part of the Mode S sensor. The MTD and RDAS were separately evaluated to determine their capability to provide radar data suitable for utilization by the Mode S sensor and Automated Radar Terminal System (ARTS). The specific test objectives were to: (1) determine that the design modifications made to the Mode S sensor to provide the capability of interfacing to either an MTD or RDAS were in compliance with the Federal Aviation Administration engineering requirement, FAA-ER-240-26 (appendix VIII); (2) provide radar baseline technical performance data to characterize the MTD, RDAS, Mode S, and ARTS; and (3) determine if the minimum radar tracking requirements are adequate to provide reliable radar track data to an air traffic control (ATC) facility. It was concluded that the Mode S sensor, when integrated with an MTD-2 radar digitizer, can provide reliable primary radar track data to the ARTS III system for automated radar track acquisition. It was also concluded that the tested RDAS did not perform at an acceptable level. (Author)

AN (1) AD-A127 150/XAG
FG (2) 170703
170900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) En Route Moving Target Detector (MTD) II Test and Evaluation.
DN (9) Final rept. Nov 79-Sep 81
AU (10) Kleuskens,Harold R.
Hess,Eric W.
Hulse,Michael S.
RD (11) Nov 1982
PG (12) 41 Pages
RS (14) DOT/FAA/CT-82/4
RN (18) DOT/FAA/RD-82/34
RC (20) Unclassified report

DE (23) *Search radar, *Moving target indicators, *Target detection
Air traffic control systems, Moving targets, Radar clutter, Aerial targets, Performance(Engineering), Radar targets, Analog to digital converters, Signal processing, Rates, Channels, Environments, Flight testing, Response, Visibility, Interference, Dynamic range, Velocity, Virginia, Aircraft, Clutter, Radar, False alarms, Reduction
ID (25) MTD(Moving Target Detectors), Enroute detectors, AN/FPS-67B, CD(Common Digitizers), Bedford, LPN-FAA-022-243-810
AB (27) The moving target detector (MTD) II is a sophisticated signal processor designed to provide improved radar detection of aircraft in the air traffic control environment, particularly in areas of heavy radar clutter. The MTD II was installed on one channel of the FPS-67B en route surveillance radar at Bedford, Virginia. The objective of this testing was to compare the operational performance of the MTD II with that of the common digitizer (CD) operating with the other channel. This report covers performance relative to percentage of target detection, false alarm rate, interference reduction, processor improvement factor, subclutter visibility, system dynamic range, velocity response, and flight testing of the MTD II and CD equipped radar channels. The results of the test show that the MTD II provides performance superior to that of the CD. (Author)

AN (1) AD-A122 201/XAG
FG (2) 050900
230200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) The Relationship between Effort Rating and Performance in a Critical Tracking Task.
DN (9) Final rept. Apr-Sep 81
AU (10) Rosenberg,Bruce
Rehmann,Jacqueline
Stein,Earl
RD (11) Oct 1982
PG (12) 57 Pages
RS (14) DOT/FAA/CT-82/66
RN (18) DOT/FAA/EM-81/13
RC (20) Unclassified report
DE (23) *Work measurement, *Performance(Human), *Performance tests, *Tracking, *Man machine systems
Human factors engineering, Cockpits, Instrumentation, Display systems, Operators(Personnel), Pilots, Input output processing, Error analysis, Corrections, Pressure, Control sticks, Flight, Response, Ratings

ID (25) Workload, LPN-FAA-161-301-150

AB (27) This report documents the results of a preliminary evaluation of a Pilot Objective/Subjective Workload Assessment Technique (POSWAT). The study employed a critical tracking task, in which 24 subjects (pilots and nonpilots) viewed an analog display of the error between operator input and system output while correcting with opposite pressure on a joystick. The purpose was to determine if there was a relationship between participant responses on a 10-point scale administered during task performance and tracking task difficulty. It is generally concluded that POSWAT used for measuring effort rating and rating delay on a regular basis during this experiment is minimally intrusive, is informative, and merits further evaluation in a cockpit environment. (Author)

AN (1) AD-A122 269/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Operational and Technical Evaluation of the Full Digital Automated Radar Terminal Systems (ARTS) Display (FDAD).

DN (9) Final rept.

AU (10) Clark, Robert
Roditi, Salvador

RD (11) Oct 1982

PG (12) 42 Pages

RS (14) DOT/FAA/CT-82-87

RN (18) DOT/FAA/RD-82/51

RC (20) Unclassified report

DE (23) *Display systems

Air traffic control systems, Plan position indicators, Digital systems, Color television tubes, Dual channel, Performance(Engineering), Radiofrequency interference

ID (25) *ARTS(Automated Radar Terminal Systems), *FDAD(Fully Digital ARTS Display)

AB (27) This report discusses the operational and technical evaluation of the Full Digital Automated Radar Terminal Systems (ARTS) Display (FDAD). The FDAD was capable of providing data entry, data display, data refresh, and input/output functions of either ARTS II, ARTS III, or ARTS IIIA computer. Three different cathode-ray tube phosphors, including color, were evaluated. Data were displayed either in a full-digital mode or a time-share mode. During the time-share mode, the display of digital data was time shared with analog radar/beacon target reports. Modifications to software, hardware, and display firmware

would be required to make the FDAD's operationally suitable. The technical evaluation conditionally accepts the displays, as tested, and it recommends their use as field displays, provided certain modifications are made. (Author)

AN (1) AD-A122 707/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 16, 1 Jan-30 Jun 82.

RD (11) 26 Oct 1982

PG (12) 44 Pages

RS (14) DOT/FAA-ACS-82-16

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Civil aviation, *Commercial aviation, *Security

Operational effectiveness, Aircraft hijacking, Prevention, Commercial aircraft, Passenger aircraft, Passengers, Bombs, Airports, Sabotage, Aviation safety, Crimes, International law, Reports

ID (25) Bomb threats

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A123 757/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) G Incapacitation in Aerobatic Pilots: A Flight Hazard

AU (10) Kirkham, William R.

Wicks, S. Marlene

Lowrey, D. Lee

RD (11) Oct 1982

PG (12) 35 Pages

RS (14) FAA-AM-82-13

RC (20) Unclassified report

DE (23) *Acceleration tolerance, *Stress(Physiology), *Flight maneuvers
Physiological effects, Inflight, Consciousness, Losses,
Tolerances(Physiology), Pilots, Hazards

ID (25) Aerobatics

AB (27) This report presents some historical perspectives of aerobatics and the physiological effects of G acceleration, especially as pertain to in-flight loss of consciousness (LOC) by the pilot. Several accidents and incidents are reviewed to illustrate that LOC occurs in some pilots during aerobatic maneuvers. Accelerometer recordings made during aerobatic performances are analyzed in regard to the G's acting on the pilot during the entire performance and during some specific maneuvers. Human tolerance to G's and specifically to changes from positive to negative G's and vice versa is discussed in regard to some published animal and human studies. This report suggests that oscillating G's as encountered in aerobatics tax the body's mechanisms to maintain blood perfusion of the brain--and consciousness. Suggestions are given to help pilots reduce the physiological hazards of G's encountered in aerobatics. (Author)

AN (1) AD-A123 839/XAG
FG (2) 061000
061500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Effects of Some Motion Sickness Suppressants on Tracking Performance during Angular Accelerations
AU (10) Schroeder,David J.
Collins,William E.
Elam,Gary W.
RD (11) Oct 1982
PG (12) 21 Pages
RS (14) FAA-AM-82-19
RC (20) Unclassified report
DE (23) *Drugs, *Motion sickness
Suppression, Tracking, Performance(Human), Angular acceleration, Vision, Prevention, Flight training, Signs and symptoms
ID (25) Dimenhydrinate, Promethazine hydrochloride, D-amphetamine, Depressants, Antimotion sickness drugs
AB (27) The two studies reported here examined the influence of three established antimotion sickness drugs on tracking performance in static (stationary) and dynamic (angular acceleration) conditions and on visual fixation ability during motion. In Study I, 40 young men were

randomly assigned in equal numbers to either a control (lactose placebo), dimenhydrinate (50 mg), promethazine hydrochloride (25 mg), or mixture (25 mg promethazine plus 10 mg d-amphetamine) group. Study II used 30 new subjects equally divided into control, dimenhydrinate (100 mg), and promethazine (50 mg) groups. Following practice, tests were conducted prior to 1, 2, and 4 hours after drug ingestion. The depressant drugs had little effect on static tracking, but impaired dynamic tracking performance and reduced ability to maintain visual fixation on a localizer/glide slope instrument due to increased ocular nystagmus. The mixture of promethazine and d-amphetamine produced none of these deleterious effects.

AN (1) AD-A123 849/XAG

FG (2) 061100

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Carbon Monoxide In-Flight Incapacitation: An Occasional Toxic Problem in Aviation

AU (10) Lacefield,Delbert J.
Roberts,Patricia A.

Grape,Paula M.

RD (11) Oct 1982

PG (12) 10 Pages

RS (14) FAA-AM-82-15

RC (20) Unclassified report

DE (23) *Carbon monoxide poisoning, *Toxicology, *Incapacitation, *Pilots
Poisonous gases, Aviation accidents, Toxic hazards,
Exposure(Physiology), Concentration(Chemistry), Toxic agents, Toxicity,
Signs and symptoms, Hypoxia, Death, Case studies

ID (25) LPN-FAA-AM-A-73-TOX-14, LPN-FAA-AM-A-82-TOX-14, LPN-FAA-AM-A-72-PHB-14,

LPN-FAA-AM-A-68-PHB-14

AB (27) Results from the toxicological study of samples from 4,072 pilots killed in general aviation accidents have revealed that carbon monoxide has been the cause of incapacitation in 21 (0.5 percent) of the cases. Two cases are presented that are typical of accidents caused by incapacitation from carbon monoxide, in that no cause was determined until after toxicological examination of the victims was made. Since no suitable system is available to warn pilots of elevated carbon monoxide levels in the cabin, education of pilots should be undertaken to make them aware of the hazards of exposure to and symptoms produced by this

highly toxic gas. (Author)

AN (1) AD-A125 458/XAG

FG (2) 010600
090100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Plan View Display Modifications for the 9020 Replacement System.

DN (9) Final rept. May-Oct 81

AU (10) Carr, John J.

RD (11) Oct 1982

PG (12) 76 Pages

RS (14) DOT/FAA/CT-82/25

RC (20) Unclassified report

DE (23) *Display systems, *Electronic switching, *Circuit interconnections,
*Drives(Electronics)

Test and evaluation, Modification, Transmitting, Schematic diagrams,
Coaxial cables, Multiplexing, Electronic relays, Switches, Output,
Spare parts, Brightness, Control, Deflection, Signals, Patterns, Air
space, Civil aviation, Measurement

ID (25) Plan view displays, NAS(National Airspace System), LPN-FAA-231-132-210

AB (27) This report describes the modifications that were made to a Plan View
Display (PVD) which allowed it to be switched between the present
National Airspace System (NAS) and a future 9020 Replacement (9020R)
System. A second PVD was also modified and used to simulate the outputs
of the 9020R System. The outputs of the simulated 9020R System were
analog X and Y deflection signals, video unblanking, and brightness
control bits. The PVD switch was controlled by a spare switch located
on the front panel. The PVD was driven either in the normal manner by
the present system or by the remote signals brought in from the 9020R
simulator PVD. The R-controls were also switched between two different
radar keyboard multiplexer (RKM) output connectors by means of an
external relay box controlled by the front panel switch of the PVD. The
switched PVD was driven over cable lengths of 20, 50, 70, and 100 feet.
Line width and brightness measurements were taken and display patterns
were observed at each of these lengths. Results were very good up to 70
feet and satisfactory up to 100 feet.

AN (1) AD-A126 443/XAG

FG (2) 131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Equivalency Evaluation of Firefighting Agents and Minimum Requirements
at U.S. Air Force Airfields.

DN (9) Final rept.

AU (10) Geyer, George B.

O'Neill, John

Urban, Charles H.

RD (11) Oct 1982

PG (12) 140 Pages

RS (14) DOT/FAA/CT-82/109

RC (20) Unclassified report

DE (23) *Fire extinguishing agents

Aircraft fires, Ground level, Powders, Foam, Liquids, Compatibility,
Air Force facilities, Fire fighting, Fire fighting vehicles, Fires,
Models, Field tests

ID (25) Halon 1211, Aqueous film forming foam, AYS 32P-13 vehicles

AB (27) An evaluation of selected aircraft firefighting agents was made both
blanketing and auxiliary and of dispensing equipment. Laboratory
studies and outdoor fire tests were conducted to ascertain the fire
extinguishing equivalency of the auxiliary agents and to determine the
most acceptable agents and equipment for use in performing large-scale
firefighting tests. Experiments were performed principally upon those
agents which were manufactured in conformance with a Federal or
Military Specification (domestic or foreign) or were approved and
listed by a recognized testing laboratory. Full advantage was taken to
avoid duplication of effort by accepting all published data which was
considered reliable by reason of its source. Large-scale fire tests
were conducted only with those agents considered worthy of additional
testing. Full-scale tactical firefighting experiments were performed on
20,555 and 10,028 square foot JP-4 fuel fires simulating the practical
critical fire area surrounding large and medium size aircraft, to
determine the effectiveness of each firefighting agent and the validity
of the techniques and agent application rates employed. From this
information sets of minimum requirements for the protection of small,
medium and large aircraft were developed for the Aircraft Ground Fire
Suppression and Rescue Services (AGFSRS). (Author)

AN (1) AD-A127 235/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

MEDICINE

TI (6) Carbon Monoxide In-Flight Incapacitation: An Occasional Toxic Problem
in Aviation

AU (10) Lacefield, Delbert J.
Roberts, Patricia A.
Grape, Paula M.
RD (11) Oct 1982
PG (12) 9 Pages
RS (14) FAA-AM-82-15
RC (20) Unclassified report
DE (23) *Pilots, *Carbon monoxide, *Toxicity, *Incapacitation
Inflight, Aviation safety, Hazards, Aviation medicine
ID (25) LPN-FAA-AM-A-72-PHB-14, LPN-FAA-AM-A-73-TOX-14, LPN-FAA-AM-A-68-PHB-14,
LPN-FAA-AM-A-82-TOX-14
AB (27) Results from the toxicological study of samples from 4,072 pilots killed in general aviation accidents have revealed that carbon monoxide has been the cause of incapacitation in 21 (0.5 percent) of the cases. Two cases are presented that are typical of accidents caused by incapacitation from carbon monoxide, in that no cause was determined until after toxicological examination of the victims was made. Since no suitable system is available to warn pilots of elevated carbon monoxide levels in the cabin, education of pilots should be undertaken to make them aware of the hazards of exposure to and symptoms produced by this highly toxic gas.

AN (1) AD-A120 079/XAG
FG (2) 100100
100200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS
ENGINEERING MANAGEMENT
TI (6) Preliminary Analysis of Wave Energy Conversion at an Offshore Structure.
DN (9) Final rept.
AU (10) Carmichael, A. Douglas
Assanis, D.
Salsich, J. O.
RD (11) Sep 1982
PG (12) 55 Pages
CT (15) MIPR-Z-70099-1-00886
RN (18) USCG-D-65-81
RC (20) Unclassified report
DE (23) *Ocean waves, *Energy conversion
Massachusetts, Bays, Navigational lights, Offshore structures, Electric power plants, Pneumatic devices, Turbines, Energy, Loads (Forces),

Feasibility studies
ID (25) Buzzard Bay, LPN-MIT-OSP-90537
AB (27) A study of the feasibility of utilizing wave energy to provide the electrical power to operate the Buzzards Bay Light Tower has been carried out. It was concluded that a pneumatic buoy attached to the light tower would be the best solution. Experiments were conducted in the MIT Towing Tank to estimate the performance of such a device. The loads imposed by the wave energy device on the tower during an extreme storm were estimated and were predicted to be very large. Theoretical and experimental studies have indicated a possible method of reducing the size of the wave energy device by controlling the air pressure in the buoy. (Author)

AN (1) AD-A121 169/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Flight Test Investigation of Area Calibrated Loran-C for En Route Navigation in the Gulf of Mexico.
DN (9) Final rept.
AU (10) Morrow, John G.
RD (11) Sep 1982
PG (12) 54 Pages
RS (14) DOT/FAA/CT-81/72
RN (18) DOT/FAA/RD-82/7
RC (20) Unclassified report
DE (23) *LORAN, *INERTIAL NAVIGATION
FLIGHT TESTING, CALIBRATION, POSITION (LOCATION), RECEIVERS, REQUIREMENTS, NAVIGATION, PRODUCTION, DRIFT, OILS, ACCURACY, MODELS,
TEXAS, GASES, LOUISIANA, TEST FACILITIES, ACCURACY, NAVIGATORS, MEXICO,
AIRBORNE, MEXICO GULF
ID (25) LPN-FAA-045-390-130
AB (27) Flight tests of two Loran-C airborne navigators were conducted in the Gulf of Mexico oil/gas exploration and production area. Two systems were installed in a Federal Aviation Administration (FAA) CV-580 aircraft to examine simultaneously the performance of a Loran-C receiver operated in an area-calibrated mode and one operated in an uncalibrated mode. Two separate test routes were flown over a period of 2 days. These routes covered the central and western test areas of the Gulf of Mexico and an overland route from Palacios, Texas, to Lafayette, Louisiana. An Inertial Navigation System (INS) was used as a

position reference standard. The INS data were updated to correct for drift. Accuracy of the position reference from the corrected INS data was + or - 0.3 nautical mile. The flight tests indicated that the use of area calibration greatly increased the area of compliance with Advisory Circular 90-45A en route accuracy requirements in the flight test. This report is a followup of report No. FAA-RD-80-47 (FAA-CT-80-18), 'Flight Test Investigation of Loran-C for En Route Navigation in the Gulf of Mexico.'

AN (1) AD-A123 856/XAG
FG (2) 200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY
TI (6) A Survey of Helicopter and Ambient Urban Noise Levels in Phoenix, Arizona.
DN (9) Final rept.
AU (10) Newman, J. Steven
RD (11) Sep 1982
PG (12) 44 Pages
RS (14) FAA/EE-82-20
RC (20) Unclassified report
DE (23) *Aircraft noise, *Ambient noise, *Acoustic measurement
Urban areas, Background noise, Sound pressure, Surveys, Exposure(General), Approach, Takeoff, Hovering, Pitch(Inclination), Helicopters, Heliports, Noise pollution, Arizona, Tables(Data)
ID (25) Phoenix
AB (27) The FAA has been conducting controlled helicopter noise measurement programs since 1976. The data have been used for a variety of purposes including evaluation of proposed U.S. and international noise standards, validation of helicopter noise prediction methodologies, and development of practical heliport design guidance. In order to supplement the results of the controlled tests, field survey data are also being gathered to represent in-service operating conditions. Measurements are intended to represent helicopter noise within the context of urban ambient background noise. The results reported in this document are termed 'survey measurements', as opposed to controlled test data, in order to reflect the limited control imposed over factors which contribute to the variability of measured noise levels. Noise data are presented for the Bell 206-L, Aerospatiale Alouette III, and the Aerospatiale A-Stare, SA-350. Operational modes include approach, takeoff, hover, and flat-pitch-idle. Noise data include A-weighted Sound Level time histories, maximum A-Weighted Sound Level (LASm), Sound

Exposure Level (LAE), and Equivalent Sound Level (Leq). (Author)

AN (1) AD-A124 043/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE
TI (6) Regulatory Aviation Medicine Its Philosophies and Limitations
AU (10) Norwood, Gordon
Jordan, Jon L.
RD (11) Sep 1982
PG (12) 10 Pages
RS (14) FAA-AM-82-14
RC (20) Unclassified report
DE (23) *Aviation medicine, *Qualifications
Limitations, Philosophy, Standards, Policies
ID (25) Medical certification, Certification
AB (27) The application of aviation medicine is relatively standardized throughout the world, both in civil and military operations. Substantial differences exist, however, in the way different countries, or even different agencies in the same country, determine the medical qualifications of persons who wish to operate aircraft. As a rule, the medical certification policies of the Federal Aviation Administration (FAA) are more liberal than those imposed by the U.S. Department of Defense and by many foreign countries. Understanding the reasons for these differences requires an awareness of the characteristics of FAA's regulatory policy. Specifically, we must consider three aspects of that policy: (1) the certification system and its overall effects, (2) the philosophy of medical certification and standards, and (3) the limitations of the system.

AN (1) AD-A125 655/XAG
FG (2) 040200
120600
250400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Hardware Description of Mass Weather Dissemination System Exploratory Engineering Model.
DN (9) Final rept.
AU (10) Quick, Paul
RD (11) Sep 1982

PG (12) 129 Pages
RS (14) DOT/FAA/CT-81/56
RN (18) DOT/FAA/RD-82/32
RC (20) Unclassified report
DE (23) *Digital computers, *Data processing equipment, *Weather communications, *Voice communications
Meteorological data, Aeronautics, Information transfer, Speech transmission, Coding, Message processing, Experimental design, Systems engineering, Speech recognition, Computer architecture, Man computer interface, Error detection codes, Telephone lines, Flight paths, Information processing, Field tests
ID (25) Computer hardware, Weather dissemination systems, PATWAS(Pilots Automated Telephone Weather Answering Service), LPN-FA-CT-131-402-540
AB (27) This report describes the Mass Weather Dissemination System Exploratory Engineering Model currently being tested in the Flight Service Station Engineering Laboratory. The object of this effort is to investigate through development, test, and evaluation, the application of digital technology to the mass dissemination of meteorological and aeronautical information. The prototype model is a fully automated system designed to transfer a significant amount of workload from the flight service specialist to system hardware and to provide better service to the flying public.

AN (1) AD-A128 702/XAG

**FG (2) 010600
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) FAA (Federal Aviation Administration) Air Traffic Activity FY 1982

AU (10) Trembley, Nancy

RD (11) 30 Sep 1982

PG (12) 225 Pages

RS (14) FAA-AMS-220

RC (20) Unclassified report

DE (23) *Air traffic

Civil aviation, Instrument flight, Approach, Air traffic control systems, Control centers, Utilization, Statistical analysis, Tables(Data)

AB (27) Contents: Aircraft Handled at FAA Air Route Traffic Control Centers; Aircraft and Instrument Operations at Airport Traffic Control Towers Operated by FAA; Instrument Approaches at FAA Air Route Traffic Control Center Areas; Instrument Approaches Handled by FAA Approach Control

Facilities; Activity at FAA Flight Service Stations (International and Domestic) and Combined Station/Towers.

AN (1) AD-A128 717/XAG

FG (2) 050200

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
SYSTEMS**

ENGINEERING MANAGEMENT

**TI (6) Summary Proceedings of the Future Navigation Systems Planning
Conference, held 3-4 August 1982, Washington, DC.**

RD (11) Sep 1982

PG (12) 93 Pages

RS (14) DOT/FAA/EM-82/26

RC (20) Unclassified report

DE (23) *Navigation, *Symposia

Radio navigation, Inertial navigation, Loran, Instrument landings, Microwave equipment, Airborne, Planning

AB (27) This publication contains a summary of proceedings of the Federal Aviation Administration (FAA) Future Navigation Planning Conference held at the Federal Aviation Administration Headquarters, Washington, D.C., on August 3-4, 1982. The purpose of the conference was: (1) to present to the users and suppliers of navigation systems, the results of FAA sponsored studies and technical evaluations of navigation systems which are to satisfy air navigation requirements in the post 1995 time period; and (2) to seek industry views on several different options for future air navigation systems preparatory to the FAA developing its recommendations on policies and plans for radionavigation services. (Author)

AN (1) AD-A130 060/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE
ADMINISTRATOR**

FOR AIRPORTS

TI (6) Report of Accomplishments under the Airport Improvement Program.

DN (9) Annual rept. no. 1, for period ending 30 Sep 82

AU (10) Martin, Virginia J.

RD (11) 30 Sep 1982

PG (12) 95 Pages

RS (14) FAA-ARP-83-3

RC (20) Unclassified report

DE (23) *Airports

Terminal flight facilities, Modification, Construction, Grants, Federal law, Tables(Data)

ID (25) Improvement, Upgrading

AB (27) Contents: The Airport Improvement Program; Charts: Airport Improvement Program - Fiscal Year 1982 Authorization; Airport Improvement Program -Grant Funding Authorization; Appropriations, and Obligations; Tables: Table I - Fiscal Year 1982 Airport Improvement Program - Grant Agreements by State; Table II - Airports Grant-in-Aid Program - Projects Placed Under Grant Agreement - Fiscal Year 1982.

AN (1) AD-A119 314/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Summary of the FAA's Future Navigation System Mix Evaluation (Through May 1982).

DN (9) Draft rept.

AU (10) Higgins,T. H.
McDonald,K. D.
Blythe,P. D.
Hogle,L. H.
Braff,R.

RD (11) Aug 1982

PG (12) 53 Pages

RS (14) DOT/FAA-EM-82-24

RC (20) Unclassified report

DE (23) *Radio navigation

Navigation aids, Civil aviation, Design to cost, Omega navigation, Instrument landings, Microwave landing systems, Inertial navigation, Omnidirectional, Navigation satellites, Accuracy

ID (25) VOR(Very High Frequency Omnidirectional Radio Range)

AB (27) This document summarizes the activities of the Federal Aviation Administration (FAA) is formulating preliminary recommendations for the navigation system or system mix that best meets civil aviation navigation requirements of the post-1995 time period. This activity is part of the FAA program described in the Federal Radionavigation Plan (FRP). The FRP specifies that a joint Department of Transportation (DoT)/Department of Defense (DoD) initial recommendation be made on the future radionavigation system mix during 1983 and that a final decision be made in 1986. The 1986 decision will then become the basis for future civil/military navigational system implementation. (Author)

AN (1) AD-A119 792/XAG

FG (2) 170400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Frequency Management Engineering Principles--Spectrum Measurements (Reference Order 6050.23).

DN (9) Final rept.

AU (10) Fretz,Joseph D.

RD (11) Aug 1982

PG (12) 73 Pages

RS (14) DOT/FAA/RD-81/81

RC (20) Unclassified report

DE (23) *Electromagnetic interference, *Engineering, *Frequency, *Measurement
Spectrum analysis, Radiofrequency, Methodology, Electromagnetic compatibility

ID (25) Frequency management, Spectrum measurement, Complaints

AB (27) Federal Aviation Administration personnel are frequently involved in the resolution of interference complaints. The skillful use of measurement equipment can be essential to the successful resolution of such complaints. This report provides a summary of the spectrum measurement techniques applicable to Federal Aviation Administration facilities using the radio frequency spectrum. It is oriented toward electromagnetic compatibility measurements made by frequency management engineers but is of interest to anyone involved in radio frequency measurements. (Author)

AN (1) AD-A120 078/XAG

FG (2) 010500

131300

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Coast Terminal Radar Approach Control Facility (TRACON) Refurbishment.

DN (9) Final rept.

AU (10) Bottomley,Donald
Hierbaum,Felix F., Jr

RD (11) Aug 1982

PG (12) 32 Pages

RS (14) DOT/FAA/CT-82/21

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Ground controlled approach radar,
*Facilities
Modification, Consoles, Configuration management, Configurations
ID (25) Refurbishment, LPN-FAA-144-170-830
AB (27) This study was conducted as a result of the Western Region's decision to change the Coast Terminal Radar Approach Control Facility (TRACON) layout from a horizontal radar island-type operation to a vertical radar perimeter-type operation. This change was brought about by a Federal Aviation Administration (FAA) decision to add terminal control advisory service to the Coast TRACON functions. In addition, the present lighting system used at the Coast TRACON produced undesirable reflections and glare. Several equipment configurations were proposed by facility and Western Region office personnel as well as by the FAA Technical Center personnel. These proposals were evaluated by Coast TRACON and Western Region office personnel. The governing factors were available space, cost, and impact on facility operations. The preferred configuration, provided additional space by recessing one row of consoles within the wall which divides the TRACON operational and maintenance areas. Experiments with various lighting techniques produced more usable ambient light while it reduced glare and reflections. Further, this study also disclosed the need to develop a new model of overhead enclosures (or shrouds) to accommodate planned instrumentation of the future. (Author)

AN (1) AD-A120 677/XAG
FG (2) 010400
140300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Omega Data Bank Report (Spring through Fall 1980)
AU (10) Turnock, Theodore J.
Rzonca, Lorraine I.
RD (11) Aug 1982
PG (12) 39 Pages
RS (14) DOT/FAA/CT-82/5
RC (20) Unclassified report
DE (23) *Data bases, *Flight recorders, *Omega navigation, *Position(Location), *Commercial aircraft
Data processing, Inertial navigation, Signal processing, Signal to noise ratio, Airborne, Flight paths, International relations, Very low frequency, Cassettes, United States
ID (25) Flight data, Omega data bank, LPN-FAA-043-311-520
AB (27) The International Bank for Airborne Omega Data continued operation at

the Federal Aviation Administration (FAA) Technical Center. This report, issued by the Data Bank, is based upon 427 flight data hours covering flights in the North Atlantic, parts of the Continental United States (U.S.) and the Caribbean, South America, and Canada. These data were collected during the spring and fall of 1980; no flights were made during the summer. There were four major contributors to the Omega Data Bank during this period with three equipment types. Operationally usable signals corresponded quite well with the Omega signal coverage prediction diagram published by the Omega Navigation System Operational Detail (ONSOD). Exceptions were noted near Ellesmere Island for the La Reunion signal, and the continental U.S. for the Argentina signal for the specific months and times of the data flights. Several operational differences were noted between two different Omega sets flown side by side in an FAA aircraft during flights in South America and the South Atlantic. Nonetheless, for both sets, Omega positions were within 2 nautical miles of the Inertial Navigation System position (95 percent probability) during normal flight conditions.

AN (1) AD-A121 188/XAG
FG (2) 250200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Recommendations for Automated Monitoring of Radio Equipment Associated with Flight Service Stations.
DN (9) Final rept. Feb-Oct 81
AU (10) Rehmann, Albert J.
RD (11) Aug 1982
PG (12) 66 Pages
RS (14) DOT/FAA/CT-82/31
RC (20) Unclassified report
DE (23) *Radio equipment
Stations, Monitoring, Automation, Remote control, Electrical properties, Flight, Emergencies, Backup systems, Maintenance
ID (25) FSS(Flight Service Stations), LPN-FAA-144-170-900
AB (27) The results of a study are contained in this report. The study examined in depth, the radio equipment associated with Flight Service Stations and Back-Up Emergency Communications (BU EC) radio equipment. In part I of the study, radio parameters critical to remote maintenance monitoring (RRM) were identified as necessary for remote certification, remote maintenance, or remote control. The parameters are grouped according to function. In part II of the study, the functional characteristics of Test Functional Modules (TFM) are defined according to the parameter grouping of part I. Finally, limited recommendations

for the electrical characteristics and operating specifications of each TFM are given.

- AN (1) AD-A121 475/XAG
FG (2) 010500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Airport Surface Detection Equipment (ASDE)-3 Improvements Test and Evaluation.
DN (9) Final rept. Oct 80-Oct 81
AU (10) Dvorsky,Louis A.
Marsden,John F.
RD (11) Aug 1982
PG (12) 27 Pages
RS (14) DOT/FAA/CT-82/39
RN (18) DOT/FAA/RD-82/23
RC (20) Unclassified report
DE (23) *Airport radar systems, *Surface targets, *Aircraft detection, *Detectors
Radar targets, Radar images, Jet fighters, Waveguides, Linear polarization, Elongation, Surfaces, Anomalies, Airports, Performance(Engineering), Radiofrequency, Clear weather, Saturation, Ku band, Images, Amplifiers, Targets
ID (25) ASDE(Airport Surface Detection Equipment), F-106 aircraft, Polarization(Circular), Right hand polarization, LPN-FAA-143-102-540
AB (27) The Airport Surface Detection Equipment (ASDE)-3 radar test bed at the Federal Aviation Administration (FAA) Technical Center was installed and evaluated in 1980. Resulting from these tests, it was noted that additional information was required prior to the issuance of the procurement specification. Specifically, the three objectives were: (1) an investigation of anomalous elongation of target returns from F-106 aircraft; (2) to determine if there is an improvement in system performance when oversized waveguide is installed in lieu of standard Ku band waveguide; and (3) a comparison of linear vertical, linear horizontal, and right hand circular antenna feed polarizations with respect to clear weather target imaging performance. This report documents the evaluation conducted and the results of this evaluation. The results indicated that: (1) the target elongation is generated by intermediate frequency (IF) amplifier saturation; (2) oversized waveguide improves system performance and should be utilized for long radiofrequency (RF) runs; and (3) linear polarization improves clear weather target imaging and should be provided to the controller as an

option. (Author)

- AN (1) AD-A123 853/XAG
FG (2) 061000
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Physiological Stress in Air Traffic Controllers: A Review
AU (10) Melton,C. E.
RD (11) Aug 1982
PG (12) 54 Pages
RS (14) FAA-AM-82-17
RC (20) Unclassified report
DE (23) *Stress(Physiology), *Air traffic controllers
Indexes, Monitoring, Automation, Anxiety, Heart rate, Phospholipids, Sleep, Comparison, Metabolites, Urine, Quality
AB (27) Ten years of research on physiological stress in air traffic control specialists (ATCS's) is reviewed. Data were derived from 20 tasks involving the experimental variables of workload, shift-rotation patterns, and automation. Laboratories at the Civil Aeromedical Institute consisted of a survey of the quantity and quality of sleep in working ATCS's, a restudy of ATCS's several years after the first study to appraise stress change, and experimental attempts to evoke a differential response to two different qualities of stress. Stress was distinctly related to imposed workload as well as to working conditions. Differences in stress levels in ATCS's on different shift-rotation patterns were minimal. Automation gave rise to increased total stress accounted for by an increased workload incident to the changeover period from annual to computerized control techniques. A stress index was developed to facilitate comparison of physiological stress at the different air traffic control (ATC) facilities and among ATCS's. Anxiety level measurements vary minimally from facility to facility indicating little impact of ATC work on the psychological state of ATC's. These and other measures show that it is clearly inappropriate to describe ATC work, as is commonly done in the popular press, as being unusually stressful.
- AN (1) AD-A118 247/XAG
FG (2) 170900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Comparison of the Mode S System to the Automated Radar Terminal System

(ARTS) with Respect to Range and Azimuth Resolution.

- DN (9) Interim rept. Sep 80-Apr 81
AU (10) Brady, Joseph J.
McMillen, James L.
RD (11) Jul 1982
PG (12) 40 Pages
RS (14) DOT/FAA/CT-82/38
RN (18) DOT/FAA/RD-82/35
RC (20) Unclassified report
DE (23) *Discrete address beacon systems, *Radar beacons
Flight testing, Data processing, Resolution, Radar signals, Azimuth,
Position(Location), Aircraft, Terminals, Sequences, Separation,
Automation
ID (25) Mode S system, ARTS(Automated Radar Terminal System), Range resolution,
Azimuthal resolution, LPN-FAA-034-243-510
AB (27) A series of flight tests were conducted at the Federal Aviation
Administration Technical Center to compare the range and azimuth
resolution capabilities of the Mode S (formerly the Discrete Address
Beacon System (DABS)), in the Air Traffic Control Radar Beacon /System
(ATCRBS) mode, to an existing Automated Radar Terminal System (ARTS)
III. The minimum achievable range and azimuth separation of two
aircraft, without garbling of either aircraft's A-Code, was determined
for both systems. The resolution results were compared to positional
aircraft separation data, collected concurrently by a precision Range
Instrumentation System, to determine the relationship between A-Code
garbling and aircraft separation. The flight test results indicate that
the 89 percent beacon resolution achieved the correlated-only Mode S
sensor has the best overall resolution in the aircraft separation
intervals of 0 deg to 2 deg in azimuth and 0 to 10,000 feet in range.
The combined correlated and uncorrelated Mode S reports were 80 percent
resolved, whereas, the ARTS reports for the same aircraft separation
intervals were 62 percent resolved. The minimum achievable range
separation, without garbling, was approximately 10,000 feet for both
systems. The azimuth separation was 2 deg for the Mode S system and 3.2
for the ARTS system.
- AN (1) AD-A118 256/XAG
FG (2) 150400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Traffic Alert and Collision Avoidance System Logic Evaluation. Volume
I. Unequipped Threat Phase.
DN (9) Final rept. Mar-Dec 81

- AU (10) Billmann, Barry R.
RD (11) Jul 1982
PG (12) 74 Pages
RS (14) DOT/FAA/CT-82/52-1
RN (18) DOT/FAA/RD-82/30-1
RC (20) Unclassified report
DE (23) *Collision avoidance, *Airborne warning and control system, *Logic,
*Threats
Flight testing, Transponders, Detection, Deficiencies, Corrections,
Modification, Scenarios, Resolution, Algorithms
ID (25) TCAS(Traffic Alert and Collision Avoidance System), Unequipped threats,
FTEG(Fast Time Encounter Generator), Unequipped aircraft
AB (27) The purpose of this report is to characterize the performance of the
Traffic Alert and Collision Avoidance System (TCAS) logic which was
developed by the Mitre Corporation. The evaluation was based on
baseline logic documentation and logic changes made between January to
October 1981. The report is the first part of a three-volume series and
reflects the evaluation of logic performance using the Fast-Time
Encounter Generator as the logic test bed for unequipped threats. The
study was conducted in two phases. The initial phase addressed the
identification and correction of logic flaws. After the improvements in
the logic were coordinated with and provided by Mitre, the second phase
assessed the TCAS logic performance for a wide variety of two-aircraft
encounters. The report identifies the logic deficiencies and the
results of the analysis. In general, TCAS logic performance was
excellent. (Author)
- AN (1) AD-A118 900/XAG
FG (2) 050100
170703
230200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Development of Supervisor Desk Modules for Terminal Radar Approach
Control (TRACON) Facilities.
DN (9) Final rept. Sep 78-Sep 81
AU (10) Hierbaum, Felix F.
Zito, Paul
Zurinkas, Thomas E.
RD (11) Jul 1982
PG (12) 96 Pages
RS (14) DOT/FAA/CT-82/50
RN (18) DOT/FAA/RD-82/59

RC (20) Unclassified report
DE (23) *Consoles, *Supervisors, *Workplace layout, *Air traffic control terminal areas, *Tables(Furniture) Planning, Office equipment and supplies, Prototypes, Space(Room), Configurations, Standardization
ID (25) TRACON(Terminal Radar Approach Control), Supervisor desks, Desks, LPN-FAA-144-170-830
AB (27) The purpose of this report is to document the quest for standard supervisor desks in air traffic control (ATC) Terminal Radar Approach Control (TRACON) rooms. Several prototype designs were studied, and a seminar was held to resolve equipment constraints. Modular desk segments which could be arranged to form multiple desk configurations were developed as a result of this investigation. (Author)

AN (1) AD-A119 289/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Initial FAA Tests on the Navigation System Using Time and Ranging Global Positioning System Z-Set.

DN (9) Interim rept. Apr-Dec 80
AU (10) Esposito,Robert J.
RD (11) Jul 1982
PG (12) 17 Pages
RS (14) DOT/FAA/CT-81/73
RN (18) DOT/FAA/RD-82/8
RC (20) Unclassified report
DE (23) *Global positioning system, *Navigational aids, *Receivers, *Flight testing
Flight instruments, Test and evaluation, Navigation satellites, Navigation reference, Acquisition, Shielding, Radiofrequency interference, East(Direction), Urban areas, Aircraft
ID (25) NAVSTAR-6P Navstar Global Positioning System, Z-SET receivers, LPN-FAA-049-330-110
AB (27) The Federal Aviation Administration (FAA) received a Navigation System Using Time and Ranging (NAVSTAR) Global Positioning System (GPS) Z-set of independent test and evaluation after this receiver was acceptance tested aboard a United States Air Force C-141 aircraft over the Yuma Proving Ground instrumented range. This report describes the initial familiarization studies conducted by the FAA in a twin turboprop engine Grumman Gulfstream with the Z-set in a stand-alone configuration. The familiarization studies included satellite shielding tests, satellite acquisition/reacquisition tests, nonprecision approaches to five east

coast airports, and operations in high noise/radiofrequency interference (RFI) environments (over airports, cities, and television towers). (Author)

AN (1) AD-A119 306/XAG
FG (2) 220200
250200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) FAA Acceptance Tests on the Navigation System Using Time and Ranging Global Positioning System Z-Set Receiver.

DN (9) Final rept. Jun 79-Dec 79
AU (10) Esposito,Robert J.
RD (11) Jul 1982
PG (12) 20 Pages
RS (14) DOT/FAA/CT-81/75
RN (18) DOT/FAA/RD-82/9
RC (20) Unclassified report
DE (23) *Global positioning system
Acceptance tests, Radio navigation, Navigation satellites, Airborne, Radio receivers, Flight testing, Jet transport aircraft, Design to cost
ID (25) Z-set receivers, LPN-FAA-049-330-110
AB (27) This report describes Federal Aviation (FAA) acceptance tests on the Navigation System Using Time and Ranging (NAVSTAR) Global Positioning System (GPS) Z-set receiver which were conducted in a United States Air Force (USAF) System Command C-141 aircraft over the instrumented range located at the Yuma Proving Ground. The Yuman laser tracking system computed a reference trajectory against which the GPS receiver solution was compared. Data from five flights, totaling over 6 hours, are presented with the objective of assessing Z-set capabilities to meet civil aviation requirements for nonprecision approaches. (Author)

AN (1) AD-A119 679/XAG
FG (2) 050700
250400
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Flight Plan Filing by Speech Recognition.

DN (9) Final rept.
AU (10) Shochet,Ephraim
Delemarre,Louis
Quick,Paul

RD (11) Jul 1982
PG (12) 69 Pages
RS (14) DOT/FAA/CT-81/64
RN (18) DOT/FAA/RD-82/39
RC (20) Unclassified report
DE (23) *Speech recognition, *Word recognition, *Voice communications, *Flight simulation, *Files(Records)
Pilots, Algorithms, Accuracy, Test and evaluation, Input, Data bases, Prototypes, Comparison, Modification, Dialects, Variations
ID (25) URD(Utterance Recognition Device), Flight plan filing, PSBT(Pilot Self Briefing Terminal), Flight service automation program, LPN-FAA-131-402-540
AB (27) The purpose of this effort was to develop and demonstrate the capability of automatic flight plan filing by machine recognition. In 1979, the Technical Center undertook an extensive effort to upgrade the Utterance Recognition Device (URD) in preparation for testing the capabilities of voice input for automatic flight plan filing. The URD was modified to include more reliable components, where advisable, and a larger memory to handle the expanded vocabulary. In addition, a dialect study was conducted to determine the locations for collecting a nationally representative voice sample in order to create reference patterns capable of performing well on all American dialects. Subsequently, over 5,000 voices from 24 cities throughout the United States were collected and processed.

AN (1) AD-A120 155/XAG
FG (2) 250300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Nondirectional Beacons: Coverage Limitations Due to Night Effect.
DN (9) Final rept.
AU (10) Berry,L. A.
Johnson,M. E.
RD (11) Jul 1982
PG (12) 27 Pages
RS (14) DOT/FAA/RD-82/44
RC (20) Unclassified report
DE (23) *Telecommunications
Beacons, Direction finding, Ground waves(Electromagnetic), Sky waves, Night, Electromagnetic compatibility, Predictions, Computer applications, Graphs
ID (25) Nondirectional beacons

AB (27) Annex 10 of International Standards and Recommended Practices Aeronautical Telecommunications contains tables of the distances at which the groundwave and skywave from a non-directional beacon (NDB) are equal and the distances at which the groundwave exceeds the skywave by 10 dB. These tables were probably based upon the experience of users. In this report the modeling assumptions necessary to duplicate the tables using modern computer prediction methods are determined. A table of distances at which the groundwave exceeds the skywave by 10 dB is computed for frequencies from 190 kHz to 1000 kHz and for ground conductivities from 5 mho/m to 0.00025 mho/m. (Author)

AN (1) AD-A138 579/XAG
FG (2) 040200
170900
201400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test and Evaluation of the Radar Thunderstorm Turbulence Detection System.

DN (9) Interim rept. Mar 80-Jun 81 on Phase 1

AU (10) Lewis,W.
Oliver,R. G.
DeLaMarche,A.
Lee,T. Y.

RD (11) Jul 1982
PG (12) 28 Pages
RS (14) DOT/FAA/CT-82/6
RN (18) DOT/FAA/RD-82/22
RC (20) Unclassified report
DE (23) *Turbulence, *Radar reflections

Detection, Thunderstorms, Doppler effect, Velocity, Research aircraft, Acceleration, Measurement, Airport radar systems, Statistical analysis, Correlation

AB (27) A thunderstorm turbulence detection test bed was developed at the Federal Aviation Administration (FAA) Technical Center by the Massachusetts Institute of Technology, Lincoln Laboratory. This consists of a system to measure and process Doppler radar parameters, and an FAA aircraft instrumented to measure turbulence concurrently with the radar observations. The test bed is being used to investigate the relationship between radar-and aircraft-measured turbulence. Radar measurements of the Doppler spectrum width and aircraft measurements of airspeed fluctuations and center-of-gravity normal accelerations were converted to the cube root of epsilon (cube root of the turbulence

dissipation factor) for comparison. Several data collections were made during the summer of 1980. Results of data analysis showed that the major turbulence sequences experienced by the aircraft were essentially reflected by the radar. However, Linear correlation coefficients between radar and aircraft the the cube root of epsilon were only about 0.5. The low correlations are considered to be due to differences in response to turbulence by the two measuring systems, deficiencies in the radar processing, and radar data interpolation errors between the 80-second radar scans. In a more practical analysis, radar-measured turbulence, classified into ranges of light, moderate, and severe turbulence, showed a potentially useful relationship to aircraft turbulence. The predictive value was enhanced by consideration of radar reflectivity factor as a screening variable.

AN (1) AD-A144 334/XAG

FG (2) 170300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Amplitude/Phase Monopulse Receiver Comparison.

DN (9) Letter rept.

AU (10) Alimenti, R. J.
Fox, D. P.

Kenton, J.

RD (11) Jul 1982

PG (12) 65 Pages

RS (14) FAA-CT-82-100-82LR

RC (20) Unclassified report

DE (23) *Receivers, *Direction finding

Amplitude, Production, Accuracy, Detectors, Azimuth

ID (25) Monopulse receivers, Phase comparison

AB (27) The purpose of this test effort was to collect performance data on a phase and an amplitude type monopulse receiver that would provide a basis for comparing the relative tradeoffs of the two approaches. In particular, the thrust of this effort was to evaluate the azimuthal accuracies and the useable beamwidths of each type of receiver. It is expected that the results of the testing conducted under this effort will form part of the basis for assessing the merits of either approach if proposed for the production Mode S sensors. (Author)

AN (1) AD-A117 445/XAG

FG (2) 070500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Northeast Corridor Helicopter Area Navigation Accuracy Evaluation.

DN (9) Data rept. Jul 79-Apr 80

AU (10) Edmonds, Jack D.

RD (11) Jun 1982

PG (12) 36 Pages

RS (14) DOT/FAA/CT-82/57

RC (20) Unclassified report

DE (23) *Flight paths, *Navigation, *Air traffic control systems
Parameters, Helicopters, Flight testing, Accuracy, Error analysis, Test and evaluation

ID (25) *Northeast corridor, Area navigation, Airspace, Crosstrack error

AB (27) This report presents area reduced navigation accuracy test flight data collected along an experimental area navigation route structure - the so-called Northeast Corridor. This corridor is an experimental helicopter airway structure extending between Washington, D.C., and Boston, Mass. It contains of 2 one-way, reduced width (4 nautical miles (nmi)) airways including one route spur from Allentown, Pa. These flight tests were a joint effort of the Federal Aviation Administration and the Helicopter Association International (HAI). The objective was to determine if the NEC could be navigated within the 4-nmi airway boundary at the 95 percent confidence level required by Advisory Circular (AC) 90-45A, "Approval of Area Navigation Systems for Use in the U.S. National Airspace System."

AN (1) AD-A117 487/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Identification of Exit Taxiways (Retroreflective Markers Only).

DN (9) Interim rept. Mar 81-May 82

AU (10) Hackler, Larry W.

RD (11) Jun 1982

PG (12) 14 Pages

RS (14) DOT/FAA/CT-82/77

RC (20) Unclassified report

DE (23) *Taxiways, *Visual aids

Runways, Exits, Surfaces, Markers, Retroreflectors

AB (27) This project is being performed in response to an SRDS request to perform a more extensive evaluation and inservice test of a method using surface retroreflective markers for identifying short-radius exit taxiways (low-speed exits). The markers were installed at the Atlantic

City (Federal Aviation Administration Technical Center) Airport. The evaluation provided additional information to help insure that the system will be acceptable to users. This report describes the results and gives plans for conducting the inservice test. (Author)

AN (1) AD-A117 512/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Direct Aircraft Velocity Determination by L-Band Moving Target Detector Radar.

DN (9) Final rept.

AU (10) Shannon,James A.

RD (11) Jun 1982

PG (12) 41 Pages

RS (14) DOT/FAA/RD-82/41

RC (20) Unclassified report

DE (23) *Velocity, *Phase shift

Aircraft, Radar, L band, Radar reflections, Signal processing, Moving target indicators, Motion, Short range(Time), Predictions

AB (27) The Moving Target Detector (MTD) radar can be used to measure the phase difference of echoes from aircraft returns. From these measurements one can determine directly the radial component of aircraft velocity.

Present practice is to determine velocity indirectly from radar position measurements. Results of measuring phase shift differences and corresponding aircraft velocities using an L-Band MTD radar are presented. Observations were made in a clutter free environment. The standard deviation of phase shift differences made from observations on a B727 airplane at a distance of 100 nmi was generally found to be 5 degrees, corresponding to a standard deviation of velocity component of 1.2 knots. The standard deviation of phase shift observed from six slower moving airplanes indicates the standard deviation of phase is generally 18 degrees or less, corresponding to a standard deviation of velocity component of 4.3 knots or less. Reliability is generally 94% for the B727 airplane and about 90% for the small airplanes, although poorer reliability is observed with tangential flight paths. Direct measurement of velocity can be used to provide increased precision in predicting aircraft motion over the short term (2 minutes).

AN (1) AD-A117 629/XAG

FG (2) 010300

130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Examination of Aircraft Interior Emergency Lighting in a Postcrash Fire Environment.

DN (9) Final rept. Mar 78-Dec 80

AU (10) Demaree,James

RD (11) Jun 1982

PG (12) 53 Pages

RS (14) DOT/FAA/CT-82/55

RC (20) Unclassified report

DE (23) *Lighting equipment, *Aircraft cabins

Emergencies, Aircraft fires, Smoke, Stratification, Visibility, Temperature, Operational effectiveness, Deficiencies, Modification, Aircraft seats, Aviation safety, Aviation accidents, Test methods, Test and evaluation

ID (25) Wide body aircraft, Exit signs, Postcrash fire, Interior lighting, Emergency lighting, LPN-FAA-181-350-320

AB (27) This report describes the effectiveness of emergency interior lighting in a wide-body aircraft test fuselage subjected to elevated temperatures and dense smoke generated by an external fuel fire and interior materials fire. Photometric measurements show significant smoke stratification. The dense smoke at the ceiling can reduce the effectiveness of emergency lighting sources in the upper one third of the aircraft cabin in the very early stages of a cabin fire, while temperatures are survivable in the lower two thirds of the cabin. Placing emergency lighting sources at or below the height of the passenger seat armrest can increase the time span over which the lights are effective. (Author)

AN (1) AD-A117 664/XAG

FG (2) 050300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Preliminary Analysis of the Benefits and Costs to Implement the National Airspace System Plan

AU (10) Horowitz,S. M.

Poritzky,S. B.

RD (11) Jun 1982

PG (12) 62 Pages

RS (14) FAA-EM-82-22

RC (20) Unclassified report
NO (21) Report on An Economic Justification for the NAS Plan.
DE (23) *Air traffic control systems
Air space, Control, Federal law, Modification, Cost effectiveness, Cost analysis, Benefits, Civil aviation, Avionics, Requirements
ID (25) *National Airspace System, Upgrading
AB (27) The many individual programs which comprise the National Airspace System Plan are designed to provide more air traffic control service to the aviation users at reduced operating costs to the FAA. The FAA is able to justify its investment in the NAS Plan by a cost/effectiveness argument. The benefits and costs to the aviation users are the focus of this report. By using example cases to quantify a portion of the potential dollar benefits that would be available to the aviation user as a result of the FAA's implementation of its NAS Plan, this report concludes that the added benefits to the users exceed the users' added costs in avionics equipment by a large margin. (Author)

AN (1) AD-A117 666/XAG

FG (2) 120600

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Memory and Computational Requirements for Tracking in the Advanced Computer System.

DN (9) Final rept. Feb 81-Feb 82

AU (10) Lefferts,Robert E.

RD (11) Jun 1982

PG (12) 25 Pages

RS (14) DOT/FAA/CT-82/46

RN (18) DOT/FAA/RD-81/75

RC (20) Unclassified report

DE (23) *Radar tracking, *Computer applications, *Air traffic control systems, *Memory devices, *Computations, *Requirements
Computers, Algorithms, Feasibility studies, Data processing, Off the shelf equipment, State of the art

ID (25) IBM 9020 computers, VHSIC (Very High Speed Integrated Circuits), LPN-FAA-122-111-100

AB (27) Computational and memory requirements of various tracking algorithms were examined for possible application with the 9020 replacement computer. For a wide range of algorithms, including those most likely to be of interest, there are no technological factors which would significantly impact the choice of algorithms given the present state

of computer technology. Further, within the next few years, technological advances will totally eliminate memory and computational tracking requirements from significantly impacting system design. It is concluded that the only substantive limitation currently imposed on the selection of tracking algorithms is the ability of the system designer to analyze, specify, test, and evaluate the most promising algorithm. (Author)

AN (1) AD-A117 691/XAG

FG (2) 010500

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Improving Conflict Alert Performance Using Moving Target Detector Data.

DN (9) Final rept. Oct 79-Sep 80

AU (10) Lefferts,Robert E.

RD (11) Jun 1982

PG (12) 85 Pages

RS (14) DOT/FAA/CT-81/17

RN (18) DOT/FAA/RD-82/47

RC (20) Unclassified report

DE (23) *Moving target indicators, *Radar tracking

Algorithms, Search radar, Radial velocity, Air traffic control systems, Ground controlled approach radar

ID (25) Conflict alert performance, LPN-FAA-122-112-100

AB (27) The feasibility of using measurements of aircraft radial velocity to improve the performance of the en route tracking algorithm in the present computational environment was examined. Radial velocity can be measured with equipment which is part of the Moving Target Detector (MTD) radar, a new type of search radar. Particular attention is paid in this report to the utilization of radial velocity in reducing speed and heading biases that occur during maneuvers. The performance of the tracking and Conflict Alert algorithms is evaluated on five maneuver detection/observation methods, including the present method. Using both standard and track-oriented parameters yields a total of ten different analyses. A simplified simulation program produces quantitative data. Because the computational resources available for tracking algorithm modifications are limited, consideration of possible applications of radial velocity measurements is restricted to simple algorithm changes. Two aspects of performance are measured: the warning time to a hazardous situation, and the nuisance alert area, a recently developed measure of the false alarm performance of the algorithms. It was

concluded that the use of the radial velocity data was not justified in the present systems given the limited computer resources available. The practicality of using radial velocity data in the more extensive system of the future is briefly considered. (Author)

AN (1) AD-A117 745/XAG

**FG (2) 010400
210700**

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Light Aircraft Piston Engine Carburetor Ice Detector/Warning Device
Sensitivity/Effectiveness.**

DN (9) Final rept. Jun 79-Oct 81

**AU (10) Cavage, William
Newcomb, James
Biehl, Keith**

RD (11) Jun 1982

PG (12) 93 Pages

RS (14) DOT/FAA/CT-82/44

RC (20) Unclassified report

NO (21) See also rept. no. FAA-ED-18-5A dated Apr 81.

DE (23) *Ice formation indicators, *Aircraft carburetors

Piston engines, Warning systems, Accuracy, Operational effectiveness, Ice formation, Rates, Detection, Accumulation, Off the shelf equipment, Fuel systems, Cooling, Aviation accidents, Test and evaluation, Civil aviation, Aircraft, Lightweight

ID (25) Carburetor ice, Light aircraft, General aviation, LPN-FAA-184-320-130

AB (27) A comprehensive test cell data collection and evaluation effort to review sensitivity and accuracy of 'off-the-shelf' carburetor ice detection/warning devices for general aviation piston engine aircraft was conducted. Presented herein are results, observations, and conclusions drawn from over 150 hours of test cell engine carburetor ice operations on a Teledyne Continental Motors O-200A engine. Static sea level test cell engine operations were conducted to review carburetor ice detectors/warning devices sensitivity and accuracy during actual carburetor icing, determine internal carburetor ice accumulation locations, ascertain how ice formation propagates through the carburetor, observe carburetor performance during ice build-up and consider most advantageous location for a carburetor ice detector. Also presented is a review of the Federal Aviation Administration's carburetor accident/incident data relative to aircraft type, pilot qualifications, time of year and location by state where carburetor ice was a factor. (Author)

AN (1) AD-A117 897/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND**

DEVELOPMENT SERVICE

TI (6) Evaluation of Four-Color Plan View Display Console

DN (9) Final rept. Jun 78-Oct 81

**AU (10) Aschenbach, John W.
Kopala, Alan J.**

Douglass, Lauren N., Jr

RD (11) Jun 1982

PG (12) 99 Pages

RS (14) DOT/FAA/RD-82/46

RN (18) XH-XD

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-RD-75-39 dated May 75, AD-A010 779.

**DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *DISPLAY SYSTEMS, *CONSOLES
HUMAN FACTORS ENGINEERING, COLORS, CATHODE RAY TUBES, COLOR
VISION**

ID (25) COLOR DISPLAYS

AB (27) Technical and operational evaluations were conducted on Plan View

Displays (PVDs) modified for both four-color and monochrome presentation. Two of six PVDs modified for color were tested and evaluated for display performance at the Federal Aviation Administration (FAA) Technical Center in Atlantic City, New Jersey. Data were collected on brightness and resolution, power consumption, color registration, character legibility and position accuracy, and distortion in the broadband or 'TV' mode. A registration board failure analysis, a maintainability analysis, and a radio frequency radiation survey were also performed. All six color PVDs were subjectively evaluated for operational suitability at the Washington Air Route Traffic Control Center (ARTCC) in Leesburg, Virginia. Data were collected to determine controller's reactions on the operational use of multicolor PVDs from questionnaires and taped interviews. (Author)

AN (1) AD-A122 794/XAG

FG (2) 010309

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
SYSTEMS**

ENGINEERING MANAGEMENT

TI (6) Transport Index Limits for Shipments of Radioactive Material in

Passenger-Carrying Aircraft.

- DN (9) 5th edition
AU (10) Friedberg,Wallace
Faulkner,Donald N.
Snyder,Lorrenza
RD (11) Jun 1982
PG (12) 69 Pages
RS (14) FAA-AM-82-12
RC (20) Unclassified report
DE (23) *Radioactive materials, *Transportation, *Indexes, *Handbooks
Passenger aircraft, Control, Passengers, Cargo, Radioactivity,
Regulations, Radiation protection, Safety
AB (27) This handbook contains figures that show, for most types of air carrier
aircraft, the cargo compartment dimensions, distances between cargo
compartments, and distances between cargo compartments and overhead
passenger compartments. It contains charts that show the maximum
allowable sum of transport indexes for a cargo area as related to (i)
the height of the tallest package with a radioactive yellow label in
the area, and (ii) the distance between the cargo floor and the
passenger floor. It also contains charts for use with a system of
predesignated areas that include the distance between predesignated
areas as well as items (i) and (ii) above. Solved problems are provided
as a teaching aid to facilitate use of the figures and charts in
determining the transport index limit for individual cargo areas and
for an entire aircraft. The material in this handbook will be useful to
FAA inspectors in training and in the field and to airline personnel.

AN (1) AD-A122 825/XAG

FG (2) 010600

050300

210400

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
SYSTEMS**

ENGINEERING MANAGEMENT

**TI (6) The Impact of Petroleum, Synthetic and Cryogenic Fuels on Civil
Aviation.**

- DN (9) Final rept.
AU (10) Blake,Charles L.
RD (11) Jun 1982
PG (12) 210 Pages
RS (14) DOT/FAA/EM-82/29
RC (20) Unclassified report
DE (23) *Fuels, *Economic impact, *Civil aviation

Petroleum products, Synthetic fuels, Cryogenics, Economic analysis,
Marketing, Forecasting, Oils, Recovery, Refining, Aviation fuels,
Aeronautics, Propulsion systems, Energy, Sources, Energy conservation,
Crude oil, Imports

- AB (27) Partial Contents: World and Long-Term Energy View; U.S. Aviation in the
Fuel Market; U.S. Petroleum Forecasting; Enhanced Oil Recovery (EOR);
Petroleum Refining and Aviation Fuels; Natural Gas; Synthetic Fuels for
Aviation; Cryogenic Fuels and Other; Aviation Propulsion; Alternative
Ground Fuels and Energy Sources; Fuel Conservation in Aviation and
Disruption of U.S. Crude Oil Imports.

AN (1) AD-A123 756/XAG

FG (2) 060500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

**TI (6) Functional Aging in Pilots: An Examination of a Mathematical Model
Based on Medical Data on General Aviation Pilots**

- AU (10) Boone,James O.
RD (11) Jun 1982
PG (12) 10 Pages
RS (14) FAA-AM-82-18
RC (20) Unclassified report
DE (23) *Mathematical models, *Biomedicine, *Aviation medicine, *Pilots,
*Aging(Physiology)
Linear systems, Numbering systems, Pathology, Diagnosis(Medicine),
Records, Indexes
ID (25) Biomathematics

- AB (27) The purpose of this study was to apply mathematical procedures to the
Federal Aviation Administration (FAA) pilot medical data to examine the
feasibility of devising a linear numbering system such that (1) the
cumulative probability distribution functions (CPDF) for persons who
are not diagnosed as having an acute pathology are lower on the scale
than those diagnosed as having an acute pathology, and (2) the CPDF's
for both groups overlap minimally. The analyses presented some
pertinent results. (1) age is not as accurate in discriminating between
the sudden incapacitating pathology and nonpathology groups as the
linear discriminant composite. (2) As age increases from post-50, to
post-55, to post-60, classification using the discriminant index
increases monotonically. (3) Better measures that predict these
pathologies with more accuracy would further separate the CPDF's of the
pathology and nonpathology groups. Based of these results a possible
strategy for future study on pilot certification is discussed.

AN (1) AD-A124 506/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Digital Flight Control System Validation.

DN (9) Technical paper

AU (10) Eldredge,Donald

Reed,John E.

Hitt,Ellis

Webb,Jeff

Mulcare,Dennis

RD (11) Jun 1982

PG (12) 19 Pages

RS (14) DOT/FAA/CT-82/94

RC (20) Unclassified report

DE (23) *Flight control systems, *Avionics, *Validation, *Airworthiness

Digital systems, Methodology, Test and evaluation,

Failure(Electronics), Reliability(Electronics), Computer program

reliability, Fault tree analysis, Systems engineering, Markov processes

AB (27) The introduction of advanced technologies, new design concepts, and

sophisticated high integrity integrated software-based digital flight

control and avionics systems has confronted the FAA with the task of

reviewing, revising, and updating its airworthiness assessment criteria

in these areas. The FAA needs to establish and maintain systems

engineering expertise as well as a capability to establish/evaluate

validation/verification procedures for software-based digital systems.

In order to accomplish this objective, the FAA must have expertise in

fault-insertion techniques, emulation, automated reliability analyses,

failure modes and effects analyses, fault-tree graphics, and other

analytical tools. In addition, these skills are needed in order to

interpret and evaluate data and information submitted, during the

certification, process, in compliance with RTCA DO-178 and FAA Advisory

Circular 25:1309-XX. This paper discusses techniques, methodologies,

data, and information required for digital flight control and avionics

systems validation. (Author)

AN (1) AD-A116 401/XAG

FG (2) 250300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Reliability and Maintainability Evaluation of the Mode S System.

DN (9) Final rept. Oct 78-May 80

AU (10) Moss,Arthur R.

Apostolakis,George C.

RD (11) May 1982

PG (12) 43 Pages

RS (14) DOT/FAA/CT-81/42

RN (18) DOT/FAA/RD-81/54

RC (20) Unclassified report

DE (23) *Discrete address beacon systems, *Reliability, *Maintainability

Printed circuit boards, Test and evaluation, Sites, Failure, Electric

cables, Cooling fans

ID (25) Mode S system, S system modes, DABS(Discrete Address Beacon System),
WWVB

AB (27) A reliability and maintainability evaluation was performed on Mode S
(formerly the Discrete Address Beacon System (DABS)) engineering model

sensors located at the Federal Aviation Administration Technical

Center, Elwood, and Clementon, New Jersey. The observed system

mean-time-between-failure (MTBF) based on chargeable failures ranged

from 767 hours for the Technical Center sensor to 1,913 hours for the

Elwood site sensor. The preponderance of failures at the Technical

Center sensor probably occurred because the system was stressed to a

greater extent than the other two sites. Elements which failed and

caused system outage at all three sites were the transmitter,

processor, and WWVB receiver. The transmitter and processor, which are

single-string elements, were found to be the weak points in the system

reliability design. The measured failure rates for these two elements,

in particular the processor, exceeded the predicted values. Problem

areas were: inadequate radio station WWVB receiver output; damage to

wire-wrap pin in the computer ensembles caused by power cables rubbing

against them, excessive failures in the traveling wave tube associated

circuitry, failure of cooling fans, susceptibility of the sensor to

lightning damage, and loose and dirty printed circuit board contacts.

(Author)

AN (1) AD-A116 403/XAG

FG (2) 010500

170900

200601

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Fiber Optics Remoting of Terminal Radar and Beacon Signals.

DN (9) Final rept. Jul 80-May 81

AU (10) Oliver,Robert G.

RD (11) May 1982
PG (12) 68 Pages
RS (14) DOT/FAA/CT-81/71
RN (18) DOT/FAA/RD-82/20
RC (20) Unclassified report
DE (23) *Fiber optics, *Airport radar systems, *Remote systems
Surveillance, Terminal flight facilities, Radar beacons
AB (27) This report discusses the study phase of the terminal radar-beacon fiber optics remoting project. Fiber optics technology is discussed and applied to the remoting of airport surveillance radar (ASR) and air traffic control beacon interrogator (ATCBI) video and control signals. The requirements of this system are outlined and an engineering model, using multiplexed and nonmultiplexed video transmissions, is specified for installation at the Federal Aviation Administration (FAA) Technical Center. Tests to be conducted on this system are briefly outlined. Cost estimates are presented as well as suggested sources of supply for the fiber optic components. The interface to the ASR and ATCBI systems is described. It is recommended that the system be built by the technical center. A schedule for completion of the remainder of the project is presented. (Author)

AN (1) AD-A122 796/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) The Effects of Physical Fatigue and Altitude on Physiological, Biochemical, and Performance Responses

AU (10) Higgins, E. A.
Mertens, Henry W.
McKenzie, Jess M.
Funkhouser, Gordon E.
White, Mary An

RD (11) May 1982

PG (12) 27 Pages

RS (14) FAA-AM-82-10

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *FATIGUE(PHYSIOLOGY), *EXERCISE(PHYSIOLOGY)

MONITORING, PERFORMANCE TESTS, BIOCHEMISTRY, TRACKING, PROBLEM SOLVING,
PHYSIOLOGICAL EFFECTS, HYPOXIA, ALTITUDE, HEART RATE, SCORING,

EPINEPHRINE

AB (27) Twelve healthy young men were evaluated in each of four experimental conditions involving the possible combinations of two exercise conditions given prior to performance testing (1 h of heavy exercise vs. no exercise) and two altitude conditions (ground level vs. 12,500 ft) which were administered during performance testing. Performance was measured during a 2 1/4-h test session with the Multiple Task Performance Battery (MTBP) which involved time-shared performance in monitoring of warning lights and meters, mental arithmetic, problem solving, and tracking. Heart rate was statistically higher after exercise than after no exercise and statistically higher at 12,500 ft than at ground level. Norepinephrine excretion was higher during exercise experiments than during no-exercise experiments. There was no altitude effect for this measurement. The overall composite score of MTPB performance was significantly lower at 12,500 ft than at ground level. The adverse effect of higher altitude was greatest in the tracking task. The 1-h period of vigorous physical exercise had no statistically significant main effect on overall MTPB scores. Residual effects of exercise resulting in increased arousal may account for the tendency for performance to be slightly higher in the case of problem solving. The interaction of altitude with exercise was also significant in the case of tracking performance. The most important aspect of the interaction was that tracking performance was significantly better at 12,500 ft following exercise.

AN (1) AD-A148 817/XAG

FG (2) 010600

050800

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) DOT/FAA Human Factors Workshop on Aviation (5th). Transcript Held at Oklahoma City, Oklahoma on 7-8 July 1981.

RD (11) May 1982

PG (12) 328 Pages

RS (14) FAA-ASF-81-7

RN (18) DOT-TSC-FAA-81-25

RC (20) Unclassified report

NO (21) See also AD-A148 816.

DE (23) *Aviation safety, *Aviation medicine, *Pilots, *Symposia
Fatigue(Physiology), Behavior, Performance(Human), Accident investigations, Human factors engineering, Biomedicine, Man machine

systems, Civil aviation, Air traffic controllers, Errors, Workshops

AB (27) This document is a verbatim transcript of the proceedings of the Fifth Human Factors Workshop held at the Mike Monroney Aeronautical Center in Oklahoma City, Oklahoma, on July 7-9, 1981. The Sixth Human Factors Workshop was held at the same facility on July 7 and 8, 1981. (Author)

AN (1) AD-A150 043/XAG

FG (2) 230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SAFETY

TI (6) Human Factors Workshop on Aviation (6th) Transcript Held at Oklahoma City, Oklahoma on 7-9 July 1981.

RD (11) May 1982

PG (12) 229 Pages

RS (14) FAA-ASF-81-8

RN (18) DOT-TSC-FAA-81-21

RC (20) Unclassified report

DE (23) *Aircraft maintenance, *Human factors engineering

Aviation accidents, Accident investigations, Identification systems, Errors, Performance(Human), Workshops, Operators(Personnel)

AB (27) Today and tomorrow we'll be discussing the human elements as it must be factored into the aviation maintenance assumptions and operators programs. All too often in the past when the probable cause of an accident or incident was identified as a human error in maintenance, that was the end of it. In the next two days, we'd like to take it a step further, not necessarily by coming up with any answer or drawing any fixations on any conclusions, but to try to identify the central issues that relate to the human factor in aviation maintenance.

AN (1) AD-A150 459/XAG

FG (2) 170703

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SAFETY

TI (6) Human Factors Workshop on Aviation (4th) Transcript Held at Atlantic City, New Jersey on 13-15 May 1981.

RD (11) May 1982

PG (12) 198 Pages

RS (14) FAA-ASF-81-9

RN (18) DOT-TSC-FAA-81-22

RC (20) Unclassified report

DE (23) *Human factors engineering, *Air traffic controllers, *Pilots Automation, Air traffic control systems, Aviation safety, Workshops, Manpower, Skills, Workload, Man machine systems

AB (27) This workshop focused on human factors engineering in air traffic control from the view point of both the air traffic controllers and the pilots. Topics include: Man machine systems; Automation, Commonality, Manpower/Workloads/Skills, and Aviation safety procedures.

AN (1) AD-A168 193/XAG

FG (2) 010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) U.S. Civil Airmen Statistics, 1981

AU (10) Carter, Patricia W.

RD (11) 31 May 1982

PG (12) 44 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *PILOTS, *FLIGHT CREWS

COMMERCIAL AVIATION, TRANSPORT, STATISTICS, HELICOPTERS, FLIGHT, INSTRUCTORS, INSTRUMENTATION, RATINGS, AVIATION PERSONNEL, TABLES(DATA), STATISTICAL DATA, GLIDERS, AIRSHIPS, INSTRUMENT FLIGHT, AIR TRANSPORTATION

AB (27) This report furnishes detailed airmen statistics. It contains a calendar year statistics on pilots and nonpilots and the number of certificates issued. Keywords: Tables(data); Private; Commercial; Student; Airline transport; Glider; Helicopter; Lighter-than-air; Instrument ratings; Flight instructors; Pilot certificates issued. (Author)

AN (1) AD-B245 733/XAG

FG (2) 131200

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SAFETY

TI (6) Human Factors Workshop on Aviation (5th) Held in Oklahoma City, Oklahoma on 7-8 July 1981 (Transcript)

DN (9) Proceedings

RD (11) May 1982

PG (12) 328 Pages
RS (14) DOT/FAA-ASF-81-7, DOT-TSC-FAA-81-25
RN (18) XH-DOT/FAA/ASF
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *HUMAN FACTORS ENGINEERING, *AERONAUTICS
SAFETY, CIVIL AVIATION, PSYCHOLOGY, WORKSHOPS, URBAN AREAS,
OKLAHOMA,
AVIATION MEDICINE
ID (25) PROCEEDINGS
DL (33) 12

AN (1) AD-P001 141/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Elusive Goal of Measuring Pilot Workload in General Aviation

AU (10) Stein,Earl S.

Fabry,John

Rosenberg,Bruce

RD (11) May 1982

PG (12) 6 Pages

RC (20) Unclassified report

NO (21) This article is from 'Proceedings of the Workshop on Flight Testing to Identify Pilot Workload and Pilot Dynamics' Held at Edwards AFB, California on 19-21 January 1982, AD-A129 333.

DE (23) *Pilots, *Workload, *Performance(Human), *Man machine systems
Cockpits, Systems analysis, Efficiency, Operational effectiveness,
Automation, Reaction(Psychology), Behavior, Flight instruments,
Information processing, Measurement, Workshops

ID (25) Component reports

AB (27) Techniques for measuring workload and performance in general aviation are under active development. The goal is to establish the tools necessary in order to provide timely and accurate information concerning the effects of systems changes on pilot behavior. Only through active, empirical research can such tools be developed.

AN (1) AD-A117 640/XAG

**FG (2) 010500
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Study of the Frequency Assignment Congestion in the Ultra High Frequency Air Traffic Control Air/Ground Communication Band.

DN (9) Final rept.

AU (10) Cram,Charles W.

RD (11) Apr 1982

PG (12) 32 Pages

RS (14) DOT/FAA/RD-82/29

RC (20) Unclassified report

DE (23) *Air traffic control systems

Air traffic control terminal areas, Military aircraft, Data bases,
Ultrahigh frequency, High altitude, Low altitude, Congestion

AB (27) To provide air traffic control of military aircraft operating in the National Airspace System, the Federal Aviation Administration (FAA) makes use of frequencies in the 225 - 400 MHz (UHF) band which is normally administered by the Department of Defense. In 1970 the Military Communications and Electronics Board (MCEB) announced their intention to implement 25 kHz channel spacing in the UHF band. In 1976, the MCEB published an implementation plan which allotted 274 channels for use by the FAA for air traffic control. The purpose of the following study is to determine if the 274 channels made available will be sufficient to satisfy existing and future communication requirements for air traffic control of military aircraft. The study will also show how much additional spectrum support would be required if the 274 channels allotted are not sufficient and possible geographic areas where this additional support would be most necessary.

AN (1) AD-A117 671/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 15, 1 Jul-31 Dec 81.

RD (11) 12 Apr 1982

PG (12) 42 Pages

RS (14) DOT/FAA/ACS-82-15

RC (20) Unclassified report

NO (21) Report to the Congress. See also AD-A110 422.

DE (23) *Commercial aviation, *Civil aviation

Security, Operational effectiveness, Aircraft hijacking, Prevention,
Reports, Commercial aircraft, Passenger aircraft, Passengers, Bombs,
Airports, Sabotage, Aviation safety, Crimes, International law

ID (25) Bomb threats

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

SE (34) 15

AN (1) AD-A118 239/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Performance of Air Traffic Control Specialists (ATCS'S) on a Laboratory Radar Monitoring Task: An Exploratory Study of Complacency and a Comparison of ATCS and Non-ATCS Performance

AU (10) Thackray, Richard I.
Touchstone, R. Mark

RD (11) Apr 1982

PG (12) 11 Pages

RS (14) FAA-AM-82-1

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Target detection
Radar, Monitoring, Manual operation, Automation, Attention, Vigilance, Performance(Human), Measurement

ID (25) LPN-FAA-AM-C-81/82-PSY-88

AB (27) The role of the air traffic control specialist (ATCS) is proposed highly automated air traffic systems of the future is currently receiving considerable attention. At the present time, a prevalent conception of the controller's role in such systems is that of a 'systems monitor' or 'systems manager.' Inherent in this view is the belief that the role of the future controller will be less that of an active planner and more that of a passive responder to alternative courses of action presented by the computerized system. Such a change in role has raised concerns that increased controller complacency, inattentiveness, boredom, and reduced readiness to react in emergencies may become serious problems in some of the systems being planned. A complex monitoring task was used to study the effect of complacency on attentional processes. The task was designed to approximate an automated air traffic control radar system. Sixteen experienced ATCS's were tested over a 2-hour session, with half assigned to a subject-controlled and half to a computer-controlled condition. Although the subject-controlled appeared to be generally superior to

the computer-controlled condition, the differences in target detection time were not significant. Additional comparisons of ATCS's with non-ATCS's on the radar monitoring task, revealed that ATCS's were significantly superior to non-ATCS's in target detection time, number of targets detected, and rated attentiveness.

AN (1) AD-A119 454/XAG

FG (2) 010500

120500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) ALSTIS - Airport Landside Simulation Model NTIS Version with Eleven (11) Internal Files, Operable on IBM Systems with IBM Version of GPSS-V.

RD (11) 13 Apr 1982

PG (12) 1 Page

RS (14) FAA/DF-82/001

RC (20) Unclassified report

NO (21) Magnetic tape.

AL (22) Source tape is in EBCDIC character set and can be prepared in 7 or 9 track modes for 1/2 inch tape. Specify character set, track, density and parity. Call NTIS with questions. Available from NTIS, \$540.00, includes documentation, AD-A117 602, AD-A117 603, AD-A117 599, AD-A117 600 and AD-A117 601. (No copies furnished by DTIC).

DE (23) *Airports
Ground traffic, Passengers, Ground vehicles, Flow, Capacity(Quantity), Mathematical models, Computerized simulation, Computer programs, Magnetic tape

ID (25) ALSIM computer program

AB (27) The Airport Simulation Model (ALSIM), available from NTIS as the tape volume ALSTIS, represents the flow of passengers and vehicles through the airport terminal area. This model simulates queueing and service processes at all essential landside facilities. ALSIM uses an input flight schedule to generate transactions representing passenger groups and accompanying visitors in a time-dependent manner. These transactions are directed to simulated facilities by the use of routine functions applicable to passenger types. Flow, occupancy and instantaneous queue length values are produced periodically as simulated time progresses. At the end of the predetermined simulation time period, summary statistics describing queueing and service processes are produced. The model uses random number generation based upon input distributions to produce service times, routing changes and transaction status assignments. A set of runs with altered random

number streams are required to provide useable output statistics. Computer run times are dependent upon factors such as airport size, simulated time specified and passenger demand. As an example, ALSIM requires approximately 7 minutes of central processor time on an IBM 370/158 to produce a single simulation run for a 100 gate airport with a traffic load of 20,000 passengers over a three-hour period using one transaction to represent two passenger groups.

21

AN (1) AD-A120 105/XAG

FG (2) 010500

120500

120600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Terminal Information Processing System (TIPS) Consolidated CAB Display (CCD) Comparative Analysis.

DN (9) Final rept. Sep 79-80

AU (10) Czekalski,Loni

RD (11) Apr 1982

PG (12) 85 Pages

RS (14) DOT/FAA/CT-81/8

RC (20) Unclassified report

DE (23) *Data processing terminals, *Information processing, *Air traffic control systems

Tactical data systems, Central processing units, Data management, Data displays, Flight, Costs, Information systems, Computer program documentation

ID (25) TIPS(Terminal Information Processing System), CCD(Consolidated Cab Display)

AB (27) The Terminal Information Processing System (TIPS) and the Consolidated Cab Display (CCD) were analyzed in terms of air traffic control (ATC) requirements, system engineering, conceptual differences and similarities, central processors, software, and central processing system cost. In broad terms, this report outlines the ATC users requirements, what the Federal Aviation Administration (FAA) requested in specification form, vendor responses to the specifications and the recommendation to include flight data management in the CCD System. (Author)

AN (1) AD-A123 843/XAG

FG (2) 050800

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Performance of 40- to 50-Year-Old Subjects on a Radar Monitoring Task: The Effects of Wearing Bifocal Glasses and Interpolated Rest Periods on Target Detection Time

AU (10) Thackray,Richard I.

Touchstone,R. Mark

RD (11) Apr 1982

PG (12) 14 Pages

RS (14) FAA-AM-82-16

RC (20) Unclassified report

DE (23) *Radar, *Eyeglasses, *Monitoring, *Air traffic controllers Performance(Human), Display systems, Alphanumeric displays, Rest, Time, Target detection, Mean

ID (25) Bifocal glasses

AB (27) The present study examines the effects of wearing bifocal glasses and interpolated rest periods on the performance of 40- to 50-year-old subjects on a radar monitoring task. The visual display was designed to resemble an air traffic control radar display containing computer-generated alphanumeric symbols. Forty men and women were divided into four equal-sized groups, with each group consisting of one of the four possible combinations of bifocal/no-bifocal and rest/no-rest conditions. All subjects were tested over a 2-hour session. Rest periods (a 5-minute break every 30 minutes) significantly reduced the performance decrement of 40- to 50-year-old subjects, bringing performance to a level approximating that of 18- to 29-year-old subjects without rest periods. The wearing of bifocal glasses did not contribute to visual strain or somatic discomfort.

AN (1) AD-A146 285/XAG

FG (2) 070400

210200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Pyrolysis Toxic Gas Analysis of Aircraft Interior Materials.

DN (9) Final rept. Jun 80-Nov 81

AU (10) Guastavino,T. M.

Speitel,L. C.

Filipczak,R. A.

RD (11) Apr 1982

PG (12) 49 Pages
 RS (14) DOT/FAA/CT-82/13
 RC (20) Unclassified report
 DE (23) *Pyrolysis, *Toxicity, *Poisonous gases, *Gas analysis
 Aircraft cabins, Materials, Internal, Gases, Thermal properties,
 Computers, Chromatographs, Ions, Test and evaluation
 AB (27) Selected aircraft interior materials previously reported are tested by
 a new methodology. Gas and ion chromatographs linked to computers are
 utilized to identify and quantify gases evolved from a specific thermal
 exposure. Results are compared to those reported by other methods and
 instruments. Time concentration profiles are utilized to 'Fingerprint'
 and identify the material by this test evaluation. (Author)

AN (1) AD-A113 619/XAG
 FG (2) 120500
 230200
 CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
 NJ
 TI (6) Evaluation of Distribution and Display Systems for Satellite Imagery.
 Phase I.
 DN (9) Interim rept. Sep-Oct 80
 AU (10) Henline, John
 Talotta, James
 RD (11) Mar 1982
 PG (12) 23 Pages
 RS (14) DOT/FAA/CT-81/45
 RN (18) DOT/FAA/RD-82/2
 RC (20) Unclassified report
 DE (23) *Data displays, *Computer graphics
 Satellite communications, Test and evaluation, Computer programs,
 Acceptability, Operational effectiveness, Man machine systems,
 Prototypes, Configurations, Reliability, Specifications, Flight control
 systems, Cathode ray tubes, Hard copy, Optical images, Comparison,
 Pilots, Questionnaires
 ID (25) Satellite imagery, FSS(Flight Service Station Application),
 GOES(Geostationary Operational Environment Satellite)
 AB (27) This in-house study was conducted to determine the acceptability and
 operational effectiveness of an experimental system for displaying and
 distributing satellite imagery designed for flight service station
 (FSS) application. Primarily, consideration was given to the efficacy
 of the displayed data, together with the presentation format used for
 the demonstration. Secondly, man-machine relationship and some software
 aspects were tested and evaluated. Interim results indicate that the

prototype system provided graphic data in a form suitable for use by
 preflight, in-flight, and en route flight advisory specialists for
 nearly all their briefing functions. Equipment configuration, assembled
 for this evaluation/demonstration, proved reliable and acceptable
 (though not necessarily optimal) by the specialists participating in
 the demonstration. Conditional acceptability included display medium
 and size, graphical quality and information presentation, and
 associated software programs for accessing the data through the
 prototype system. It is recommended that a field study be conducted as
 Phase II of this evaluation. (Author)

AN (1) AD-A114 655/XAG
 FG (2) 010309
 010600
 CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
 NJ
 TI (6) Reduction and Analysis of Mode C Altitude Data Collected at High
 Altitudes Over the Continental United States.
 DN (9) Final rept. Sep 77-Apr 78
 AU (10) Rigolizzo, Robert
 RD (11) Mar 1982
 PG (12) 101 Pages
 RS (14) DOT/FAA/CT-81/53
 RN (18) DOT/FAA/EM-82/9
 RC (20) Unclassified report
 DE (23) *Flight paths, *Vertical orientation, *Commercial aviation
 Separation, High altitude, Transmeridian flights, Data acquisition,
 Data processing, Test methods, Error analysis, Data reduction, Data
 management, Commercial aircraft, Digital systems, Mission profiles,
 Tables(Data), Graphs, Standards, Specifications, Test and evaluation,
 Systems analysis, United States
 ID (25) Flight technical error, Vertical separation standards, Aircraft height
 keeping systems, Transponded mode C altitude, LPN-FAA-012-102-230
 AB (27) This report describes the reduction and analysis of mode C altitude
 data collected over the en route centers of Cleveland, Ohio; Memphis,
 Tennessee; and Albuquerque, New Mexico. The data were gathered under
 the aegis of the separation standards program primarily for the study
 of lateral navigation performance over the continental United States at
 high altitudes. This study provides a procedure for estimating the
 vertical flight technical error as evidenced from mode C altitude data
 recorded at the en route centers. It does not account for basic
 altimeter system error or flight technical error biases and/or
 fluctuations that are not observable in the ground-derived mode C

reported altitude. The data are fitted to six different analytical distributional forms. The effect that data quantization has on the estimation of the parameters of the distributions is examined. Then statistical tests are performed to evaluate the appropriateness of each distributional model in representing the histogram of the mode C deviations. A preliminary analysis is conducted to investigate the association between mode C altitude and aircraft environmental performance characteristics commonly utilized in evaluating separation criteria, as well as identifying aircraft attributes that are of major interest when evaluating vertical flight technical error. (Author)

- AN (1) AD-A114 741/XAG**
FG (2) 061000
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Effects of Prior Physical Exertion on Tolerance to Hypoxia, Orthostatic Stress, and Physical Fatigue
AU (10) Lategola, Michael T.
Lyne, Peggy J.
Burr, Mary J.
RD (11) Mar 1982
PG (12) 15 Pages
RS (14) FAA-AM-82-4
RC (20) Unclassified report
DE (23) *Hypoxia, *Fatigue(Physiology), *Tolerances(Physiology) Stress(Physiology), Orthostatism, Cardiovascular system, Respiration, Psychomotor tests, Psychomotor function, Tables(Data), Oxygen, Nitrogen, Mixtures
ID (25) LPN-FAA-AM-A-81-PHY-122
AB (27) Ten healthy men, 20-35 years old, were tested for tolerance to hypoxia, orthostatic stress, and physical fatigue after a period of rest, and, on another occasion, after a period of physical exertion. Exertion consisted of four 10-min periods of pedal ergometry; each period consisted of a 30-watt (W) load imposed for 2 min, 60 W for 4 min, and 100 W for 4 min. Testing included a 100-min exposure to an oxygen/nitrogen gas mixture equivalent to 3658 m of altitude, 2 min of lower body negative pressure (LBNP) at -40 torr differential pressure, and 6 min of 50 W pedal ergometry. Psychomotor testing was conducted during hypoxic exposure. Although some statistically significant ($p < \text{or} = 0.05$) physiological decrements were associated with prior physical exertion, psychomotor performance and mentation were not significantly affected. In this study, prior physical exertion produced no adverse

effects on physiological tolerances, mentation, or psychomotor performance. (Author)

- AN (1) AD-A114 743/XAG**
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Evaluation of Cardiopulmonary Factors Critical to Successful Emergency Perinatal Air Transport
AU (10) Lategola, M. T.
Flux, M.
RD (11) Mar 1982
PG (12) 28 Pages
RS (14) FAA-AM-82-5
RC (20) Unclassified report
DE (23) *Medical evacuation, *Air transportation, *Pregnancy Medical services, Emergencies, Risk, Cardiovascular system, Pulmonary function, Monitoring, Hypobaric conditions, Hypoxia
ID (25) Perinatal air transport
AB (27) Regionalization of specialized perinatal care is a fully viable and progressing concept. The two major components of regionalized care are the level III care facility and the air transport service. In descending importance, the medical transport team, the pilot and aircraft, and related technology and equipment are the three most important components of the transport service. Although significant reductions in perinatal morbidity and mortality have already resulted from development of regional care, additional progress is possible and desirable. Areas of possible improvement are: earlier precrisis diagnosis of maternal and/or fetal risk at level I care; supplementary training of medical transport personnel in perinatal aspects of Aviation Medicine, Physiology, and Safety; technology or preflight stabilization of the pregnant mother or the neonate; adjunct medical training of transport pilots; exclusive use of multiengine, fixed-wing, all-weather aircraft; and technology of in-flight life support and monitoring equipment and methods. (Author)
- AN (1) AD-A114 764/XAG**
FG (2) 050600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

**TI (6) A Generic Model for Evaluation of the Federal Aviation Administration
Air Traffic Control Specialist Training Programs**

AU (10) Boone, James O.

RD (11) Mar 1982

PG (12) 32 Pages

RS (14) FAA-AM-82-2

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Training

Specialists, Reliability, Models, Test and evaluation, Statistical analysis, Mathematical models

AB (27) The Systems Analysis Research Unit at the Civil Aeromedical Institute (CAMI) has developed a generic model for Federal Aviation Administration (FAA) Academy training program evaluation. The model will serve as a basis for integrating the total data base into a common format across all training programs. The model consists of four components: (1) design, (2) implementation, (3) formative, and (4) summative evaluation. Design evaluation is an assessment of the comprehensive implementation plan; implementation evaluation is a determination that the plan is completely and accurately implemented according to prescription; formative evaluation is a continual monitoring of the program to keep the process reliable, stable, and on track; and summative evaluation monitors the product of the training program. The design evaluation relies on the task, knowledge, and skills analysis and the documents in the implementation plan. The implementation evaluation makes use of the data from frequent status studies. Formative and summative evaluations make use of statistics and mathematical modeling, primarily linear regression models, to monitor the process and products of the programs and to estimate and determine the impact of changes made to the programs. (Author)

AN (1) AD-A114 878/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Crashworthiness Studies: Cabin, Seat, Restraint, and Injury Findings in Selected General Aviation Accidents

AU (10) Kirkham, William R.

Wicks, S. Marlene

Lowrey, Donald Lee

RD (11) Mar 1982

PG (12) 24 Pages

RS (14) FAA-AM-82-7

RC (20) Unclassified report

DE (23) *Crashworthiness, *Aviation accidents

Aircraft cabins, Aircraft seats, Restraint, Aviation injuries, Cockpits, Survival(Personnel), Statistical data, Tables(Data), Position(Location)

AB (27) This report reviews 47 survivable or partly survivable accidents investigated since 1973 by personnel from the Civil Aeromedical Institute. The accidents were reviewed for a number of features of crashworthiness and, in particular, for injuries to occupants in relation to the severity of the impact and the performance of cabin and restraint systems. Opinions were rendered by trained crash injury investigators as to the role or expected role in seats and upper torso restraints in adding to or lessening the injuries. The data support the general concepts that nonoccupiable portions of the aircraft receive greater physical damage than occupiable areas. The greatest damage to the occupiable area is to the forward portion of cockpit/cabin and the occupants have a greater chance of survival if the cockpit/cabin remains reasonably intact. Occupants seated forward in the cockpit/cabin receive greater injuries than those seated more rearward. Further, the findings suggest that seat placement or seat failure to one degree or another intensified injuries (as compared to more optimum crashworthy seats) to occupants in at least 30 percent of the accidents reviewed. Upper torso restraints, in the few instances used, were beneficial, and had they been used by all occupants, would have significantly reduced the injuries. The report discusses the relation of the occupant to the seat and restraint system and the apparent benefit to be derived from a well-designed impact attenuating seat and, in particular, use of an upper torso restraint. (Author)

AN (1) AD-A114 919/XAG

FG (2) 061000

061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Alcohol-Induced Physiological Displacements and Their Effects on Flight-Related Functions

AU (10) Lategola, Michael T.

Lyne, Peggy J.

Burr, Mary J.

RD (11) Mar 1982

PG (12) 22 Pages

RS (14) FAA-AM-82-3

RC (20) Unclassified report
DE (23) *Alcohol consumption
Pilots, Tolerances(Physiology), Flight, Physiological effects, High altitude, Simulation, Hypobaric chambers, Cardiovascular system, Blood, Respiration, Reduction, Blood pressure, Oxygen, Heart rate, Alcohols
ID (25) Blood alcohol
AB (27) Tolerances of human subjects for orthostasis and physical work were determined at a simulated altitude of 3,048 m. Orthostasis was induced with a lower body negative pressure (LBNP) device and physical work was done on a pedal ergometer. Altitude was simulated in a hypobaric chamber. Tests were carried out under two experimental conditions: (1) after subjects drank an alcoholic beverage, or (ii) after subjects drank a placebo beverage (no alcohol). The alcoholic beverage produced blood alcohol concentrations (BAC's) of about 90 mg/100 ml of blood (90 mg percent). At altitude, arterial oxyhemoglobin saturation (HbO2) remained adequately compensated but was lower after alcohol than after placebo intake. Arithmetic and eye/hand coordination performances were both significantly decreased after alcohol. Ergometry, after alcohol, was well tolerated despite some decreased cardiorespiratory efficiency. The LBNP applied around peak BAC at altitude was tolerated without subjectively adverse symptoms despite significant decreases in several cardiovascular parameters. Cardiovascular adequacy along with maintained plasma volume around peak BAC appeared to be temporarily protective against orthostatic incapacitation during LBNP. Reversal of this temporary orthostatic protection during BAC recession is possible. (Author)

AN (1) AD-A118 238/XAG
FG (2) 060400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Spatial Geometry of the Human Pelvis
AU (10) Reynolds,Herbert M.
Snow,Clyde C.
Young,Joseph W.
RD (11) Mar 1982
PG (12) 42 Pages
RS (14) FAA-AM-82-9
RC (20) Unclassified report
DE (23) *Anthropometry, *Pelvis, *Biomechanics, *Anatomical models
Human body, Symmetry, Spatial distribution, Sizes(Dimensions), Shape, Skeleton, Males, Females, Experimental design, Scale models, Axes,

Three dimensional, Mean, Standard deviation
ID (25) LPN-FAA-AM-B-77-PRS-60, LPN-FAA-AM-B-78-PRS-60, LPN-FAA-AM-B-79-PRS-60,
LPN-FAA-AM-B-80-PRS-60, LPN-FAA-AM-B-81-PRS-60
AB (27) This report presents a three-dimensional description of adult female and male pelvis from the Hamann-Todd skeletal collection, Cleveland Museum of Natural History. Based on a linear height/weight matching strategy and the 1961-1964 U.S. Health and Examination Survey (HES) data, specimens were selected to represent the small female, medium male, and large male pelvic sizes. One hundred and twenty-three anatomically defined points are used to describe the spatial pelvic geometry in a pelvic-anatomical axis system. A statistical summary of means and standard deviations is presented as X, Y, and Z coordinate value sets to identify each point in three-dimensional space. Full-scale models for each size category were produced for design modeling of anthropomorphic test devices. These data will also be useful as comparative standards for forensic investigations of air crashes and quantitative information on size and shape variability of adult human pelvis. (Author)

AN (1) AD-A121 246/XAG
FG (2) 010300
010500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Preliminary Evaluation of the Basic Experimental Active Beacon Collision Avoidance System (BCAS).
DN (9) Final rept.
AU (10) Quish,Edward
Glowacki,Edward F.
RD (11) Mar 1982
PG (12) 98 Pages
RS (14) DOT/FAA/CT-82-100-39LR
RN (18) DOT/FAA/RD-82/67
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Radar beacons, *Collision avoidance
Flight paths, Discrete address beacon systems, Patterns, Density, Target acquisition
ID (25) Air traffic radar beacon control systems, BCAS(Beacon Collision Avoidance System)
AB (27) This data report provides information on the testing of a basic Active Beacon Collision Avoidance System (ABCAS). The system tests were

initiated in February of 1980 and were conducted in a test-evaluate-design improvement iterative process. As a result, the data in this report generally is restricted to tests which were conducted after July 13, 1980. This date is considered the point at which the design of the tracking and threat evaluation and resolution software was frozen. The flight program consisted of conducting planned encounters and operational familiarization flights in terminal areas. Two hundred and twenty-five (225) hours of instrumented flight were conducted which included 255 planned encounters and 131 operational and demonstration landings and approaches into 18 major cities. During the test period following July 13, 114 hours of instrumented flight were conducted which included 110 planned encounters and all of the operational and demonstration landings and approaches. During this period of instrumented flight, 23 unplanned encounters were experienced with random targets. Initial evaluations were performed on target acquisition range, computer utilization, track continuity, and advisory verification and appropriateness of planned and unplanned encounters.

AN (1) AD-B248 301/XAG

FG (2) 050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Management and Employee Relationships Within the Federal Aviation Administration. Volume I

AU (10) Jones, Lawrence M.

RD (11) 17 Mar 1982

PG (12) 152 Pages

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *MANAGEMENT, *EMPLOYEE RELATIONS

TASK FORCES, INTERPERSONAL RELATIONS, HUMAN RELATIONS

DL (33) 12

AN (1) AD-A112 247/XAG

FG (2) 090100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Very High Frequency (VHF) Multicoupler Tests.

DN (9) Final rept. Mar-Apr 81

AU (10) Rehmann, Albert J.

RD (11) Feb 1982

PG (12) 32 Pages

RS (14) DOT/FAA/CT-81/62

RC (20) Unclassified report

DE (23) *Couplers

Test methods, Very high frequency, Intermodulation, Requirements, Distortion

ID (25) Multicouplers, LPN-FAA-219-151-200

AB (27) This report describes tests conducted on two commercially available very high frequency (VHF) multicouplers to determine if they could meet a set of proposed specifications. The multicouplers met all proposed specifications except the intermodulation distortion requirements.

(Author)

AN (1) AD-A112 248/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Design and Implementation of Efficient Algorithms for Automatic Determination of Corrected Slant Range.

DN (9) Final rept.

AU (10) Stout, D. W.

Mulholland, R. G.

RD (11) Feb 1982

PG (12) 22 Pages

RS (14) DOT/FAA/CT-81/30

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Slant range, *Radar scanning, *Corrections, *Aerial targets

Efficiency, Automatic, Algorithms, Parameters, Test and evaluation, Real time, Continuity, Error correction codes, Numerical methods and procedures, Approximation(Mathematics), Accuracy, Memory devices

ID (25) Newton Raphson method, NAS(National Airspace System), LPN-FAA-975-200-10A

AB (27) This report introduces a systematic approach to the design of algorithms for evaluating the corrected slant range in a radar surveillance system. Applications include air traffic control (ATC) operations requiring real-time continuous computation for a multitude of targets without overtaxing available computational resources. From the point of view of accuracy, utilization of memory, and computational speed, the design technique is capable of providing an algorithm that is superior to the corrected slant range technique presently employed in the National Airspace System (NAS). (Author)

AN (1) AD-A112 249/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Mode S System Accuracy.
DN (9) Final rept. Jun-Oct 80
AU (10) Chapman, Clifford
Brady, Joseph J.
RD (11) Feb 1982
PG (12) 69 Pages
RS (14) DOT/FAA/CT-81/67
RN (18) DOT/FAA/RD-81/90
RC (20) Unclassified report
DE (23) *DISCRETE ADDRESS BEACON SYSTEMS
POSITION FINDING, SLANT RANGE, FLIGHT TESTING, POSITION(LOCATION),
INSTRUMENTATION, DETECTORS, SEQUENCES, PRECISION, AIRCRAFT,
ACCURACY,
NEW JERSEY, AZIMUTH, OPERATION
ID (25) Mode S systems, Elwood, Clementon, ATRCBS(Air Traffic Control Radar
Beacon System), LPN-FAA-034-241-510
AB (27) A series of flight tests were performed using three Mode S (formerly
the Discrete Address Beacon System (DABS)) sensors for the purpose of
determining the capability of each sensor in reporting the true
position of an aircraft. For both the Mode S and the Air Traffic
Control Radar Beacon System (ATCRBS) mode of operation, slant range,
and azimuthal position data, as reported by each sensor, were compared
to positional data collected concurrently by a precision range
instrumentation system at the Federal Aviation Administration (FAA)
Technical Center.

AN (1) AD-A112 663/XAG
FG (2) 040200
170900
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Test and Evaluation of the Airport Radar Wind Shear Detection System.
DN (9) Final rept. Mar 78-May 81
AU (10) Offi, Dominick L.
Lewis, William
Lee, Tai
DeLaMarche, Alfred

RD (11) Feb 1982
PG (12) 39 Pages
RS (14) DOT-FAA-CT-81-63
RN (18) FAA/RD-81/85
RC (20) Unclassified report
DE (23) *Meteorological radar, *Wind shear, *Search radar, *Doppler radar
Test and evaluation, Computer programs, Wind velocity, Wave
propagation, Weather, Limitations, Measurement, Precipitation, Towers,
Accuracy, Aircraft, Wind, Agreements, Radar, Air
ID (25) ASR(Airport Surveillance Radar)
AB (27) A wind shear detection system, developed by the Wave Propagation
Laboratory (WPL) to operate with the Federal Aviation Administration
(FAA) Airport Surveillance Radar ASR-(8), was installed and tested at
the FAA Technical Center. Initial tests consisted of hardware and
software shakedown and feasibility determinations. Second phase tests
compared radar with aircraft and tower winds, evaluated the wind shear
measurement capability under various weather conditions, and
investigated the effectiveness of a simple two-azimuth pointing
strategy. Final efforts consisted of observations in all-weather
regimes and tests of a modified velocity-azimuth display (VAD) and a
glide slope scan. Results showed the system to be compatible with and
to operate satisfactorily with the ASR-8. The processing and spectral
display of clear air and precipitation returns is feasible. The
accuracy of agreement between radar-measured winds and components of
the aircraft-measured winds in both radially oriented flights and
runway offset flights using a two-azimuth pointing technique, a glide
slope scan, and a modified VAD was examined. Radar versus tower wind
agreement was also examined. Potentially dangerous wind shears
associated with weather during these tests were detectable. Certain
system limitations were also defined and considered. (Author)

AN (1) AD-A112 706/XAG
FG (2) 010600
050200
250500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Software Functional Description of Mass Weather Dissemination System
Exploratory Engineering Model.
DN (9) Final rept.
AU (10) Delemarre, Louis
RD (11) Feb 1982
PG (12) 52 Pages

RS (14) DOT/FAA/CT-81/33
RN (18) DOT/FAA/RD-82/1
RC (20) Unclassified report
DE (23) *Information transfer, *Meteorological data, *Weather communications,
*Data management, *Civil aviation
Aeronautics, Computer programs, Digital systems, Test and evaluation,
Pilots, Telephone systems, Work, Prototypes, Flight paths, Models,
Computer communications, Command and control systems, Flow charting,
Minicomputers
ID (25) Mass Weather Dissemination System Exploratory Engineering Model
AB (27) This report describes the Mass Weather Dissemination System Exploratory
Engineering Model software currently being evaluated in the Flight
Service Station Engineering Laboratory. The object of this effort is to
investigate, through development, test and evaluation, the application
of digital technology to the dissemination of meteorological and
aeronautical information. The prototype model is a fully-automated
system designed to transfer a significant amount of workload from the
flight service station specialist to system hardware/software in order
to provide better service to the flying public. (Author)

AN (1) AD-A113 637/XAG
FG (2) 010300
230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Cockpit Display of Traffic Information and the Measurement of Pilot
Workload: An Annotated Bibliography.

DN (9) Final rept. 1970-1982
AU (10) Rehmann, Jacqueline T.
RD (11) Feb 1982
PG (12) 62 Pages
RS (14) DOT/FAA/CT-81/49
RN (18) DOT/FAA/EM-81/9
RC (20) Unclassified report
DE (23) *Bibliographies, *Display systems, *Air traffic
Cockpits, Pilots, Monitoring, Work, Job analysis, Measurement,
Performance(Human), Physiological effects, Mental ability
ID (25) LPN-FAA-161-301-120
AB (27) Approximately 80 references relating to pilot workload were selected
and summarized as part of the Cockpit Display of Traffic Information
(CDTI) studies currently being conducted by the Federal Aviation
Administration Technical Center in Atlantic City, New Jersey. A
comprehensive search of the scientific literature was conducted using

several sources, including books, scientific journals, proceedings of
technical meetings, and computerized information retrieval. Specific
topics covered on this annotated bibliography, as they related to CDTI
and its concomitant workload considerations, are subjective measures,
spare mental capacity, primary task measures, and physiological
measures. (Author)

AN (1) AD-A114 102/XAG
FG (2) 201400
250200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Procedure to Evaluate Changes to the FM Broadcasting Table of
Assignments to Determine if Interference to Aeronautical Radio
Facilities Could Result.

DN (9) Final rept.
AU (10) Cram, Charles W.
RD (11) Feb 1982
PG (12) 29 Pages
RS (14) DOT/FAA/RD-82/4
RC (20) Unclassified report
DE (23) *Radiofrequency interference, *Radio broadcasting, *Instrument
landings, *Frequency modulation
Very high frequency, Tables(Data), Facilities, Aeronautics, Receivers,
Stations, Avionics, Interference
AB (27) For several years the FAA has been receiving complaints of interference
to ILS Localizer facilities in the 108 - 112 MHz band, VOR facilities
in the 108 - 118 MHz band, and ATC communication facilities in the 118
- 136 MHz band from FM broadcasting stations in the 88 - 108 MHz bands.
In 1978, the FAA published a report documenting a test program
performed by the National Aviation Facilities Experimental Center
(NAFEC) that investigated the problem of FM interference to avionic
receivers. At the request of the FAA, the Radio Technical Commission
for Aeronautics established Special Committee, SC-141, to study the
problem and recommend methods to reduce the potential for interference
to avionic receivers. One of RTCA's recommendations was that changes to
the Table of FLM Assignments administered by the FCC should be
evaluated during the rulemaking process necessary to make such changes,
to determine whether interference to aeronautical radio facilities
could result. The purpose of this report is to describe a procedure for
evaluating changes to the Table of FM assignments using methods
described in the NAFEC report. (Author)

AN (1) AD-A114 117/XAG

FG (2) 010303

040100

200300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A Compendium of Lightning Effects on Future Aircraft Electronic Systems.

DN (9) Final rept.

AU (10) Rasch,Nickolus O.

RD (11) Feb 1982

PG (12) 257 Pages

RS (14) DOT/FAA/CT-82/30

RC (20) Unclassified report

DE (23) *Military aircraft, *Avionics, *Lightning, *Electromagnetic interference

Workshops, Interactions, Aircraft, Electronic equipment, Electrical equipment, Digital systems, Data processing, Transients, Forecasting, Mathematical models, Jet fighters, Coronas, Triboelectricity

ID (25) F-106B aircraft, Compendiums, LPN-FAA-182-340-100, LPN-FAA-ACT-340

AB (27) This publication is a composite of presentations given at the NASA-Langley Research Center/FAA Technical Center 'Lightning Effects on Future Aircraft Systems Workshop' held on November 4-6, 1981, at the NASA-Langley Research Center Facility. The presentations encompassed the full spectrum of lightning research from lightning phenomenology, lightning modeling, electromagnetic issues associated with composite materials, to the lightning/aircraft electromagnetic interaction analysis. Also included are a total of five presentations assessing the Digital System upset phenomena. (Author)

AN (1) AD-A114 696/XAG

FG (2) 010600

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) FAA Aviation Forecasts-Fiscal Years 1982-1993.

RD (11) Feb 1982

PG (12) 72 Pages

RS (14) FAA-APO-82-2

RC (20) Unclassified report

AL (22) Availability: Superintendent of Documents, GPO, Washington, DC 20402 PC \$4.50. Microfiche furnished to DTIC (and NTIS) users.

DE (23) *Civil aviation, *Air traffic, *Forecasting, *Economic analysis
Planning programming budgeting, Management planning and control, Economics, Growth(General), Energy conservation, United States Government, Airports, Consumers, User needs, Commercial aviation, Military operations, Econometrics

AB (27) This report contains the Fiscal Years 1982 to 1993 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public.
24

AN (1) AD-A114 742/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Effects of Approach Lighting and Variation in Visible Runway Length on Perception of Approach Angle in Simulated Night Landings

AU (10) Mertens, Henry W.
Lewis, Mark F.

RD (11) Feb 1982

PG (12) 21 Pages

RS (14) FAA-AM-82-6

RC (20) Unclassified report

DE (23) *Approach

Angles, Visual perception, Night landings, Approach lights, Runways, Length, Variations, Simulation, Cues(Stimuli)

ID (25) LPN-FAA-AM-A-80/81-PSY-85, LPN-FAA-AM-D-79-PSY-67

AB (27) Previous experiments have demonstrated illusions due to variations in both length and width of runways in nighttime 'black hole' approaches. Even though approach lighting is not designed to provide vertical guidance, it is possible that cues from approach lights could interact with cues from runway lighting to reduce illusions due to variation in runway size. Two experiments were conducted to evaluate the effect of approach lighting on perception of approach angle in simulated night

approaches. In the first experiment, 40 pilots made simulated visual approaches to a 150- by 6,000-ft runway with and without a 3,000-ft approach light system (ALSF-2). Pilots controlled a moving runway model to produce a constant 'normal' angle of approach over the distance range of 23,000 ft to 8,000 ft from threshold. In the second experiment, 24 pilots made simulated approaches to a 150- by 6,000-ft runway which was either fully visible or which had lights of the upwind half occluded. In addition, a 1,400-ft abbreviated approach light system (SSALS) was used at three intensities. Decreasing the visible length of the runway by occulting lights of the far half increased mean generated approach angles from 2.2 deg to 2.7 deg in agreement with results of a previous experiment involving similar lengths of runways. Neither the presence of equal intensity approach lights nor uncomfortable glare from approach lights 20 times brighter than runway lights had an effect of practical significance on responses. These findings reinforce previous experimental demonstrations of the importance of runway size cues related to varying runway length, and also show that potential size cues provided by approach lights do not prevent illusions due to variations in runway size.

AN (1) AD-A111 185/XAG

FG (2) 010500

040200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Numerical Simulation of Wind Fields Calculated from Assumed Mode S Data Link Inputs.

DN (9) Final rept. Aug 79-Jul 81

AU (10) Carro,Anthony

Goff,R. Craig

RD (11) Jan 1982

PG (12) 19 Pages

RS (14) FAA/CT-81/77

RN (18) FAA-RD-81/100

RC (20) Unclassified report

DE (23) *Wind

Data bases, Airports, Simulation, Data acquisition, Three dimensional, Data links, Airport radar systems, Numerical analysis, Air flow, Predictions, Accuracy, Feasibility studies

ID (25) Mode S data link, Wind fields, LPN-FAA-151-412-370

AB (27) The future availability of the Mode S data link has suggested the possibility of using data collected by airplanes flying in the airport

environment to reconstruct the atmospheric wind field in the airport area. These reconstructed fields would conceivably be of use to the metering and spacing personnel as well as to meteorologists and pilots flying through this particular atmospheric environment. An investigation was conducted to determine the feasibility of using a numerical method developed by J. T. Schaefer and C. A. Doswell III to produce an objectively analyzed wind field from sparse aircraft observations. A theoretical wind field resembling atmospheric conditions was used to compare the predicted field with the assumed theoretical field. Also investigated were (1) the degradation of the technique produced by decreasing the number of observations and (2) the influence of wind wavelength in the accuracy of the wind field prediction.

AN (1) AD-A111 733/XAG

FG (2) 170300

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Comparison Between the Surveillance Performances of the Air Traffic Control Radar Beacon System Mode of the Mode S and the Automated Radar Terminal System.

DN (9) Interim rept. Jun-Sep 80

AU (10) Swanseen,William

RD (11) Jan 1982

PG (12) 24 Pages

RS (14) FAA/CT-81-29

RN (18) FAA/RD-81-32

RC (20) Unclassified report

DE (23) *Discrete address beacon systems, *Radar beacons, *Range finding, *Direction finding

Data reduction, Automation, Performance(Engineering), Accuracy, Altitude, Surveillance, Radar signals, Detectors, Azimuth, Reliability

ID (25) S modes, ARTS(Automated Radar Terminal System), DABS(Discrete Address Beacon System), ATCRBS(Air Traffic Control Radar Beacon System)

AB (27) A test and evaluation was conducted at the Federal Aviation Administration Technical Center to compare the surveillance performance and the range and azimuth accuracy of the Air Traffic Control Radar Beacon System (ATCRBS) mode of the Mode S (formerly the Discrete Address Beacon System (DABS)) to that achieved with the existing Automated Radar Terminal System (ARTS) III. Targets of opportunity and ATCRBS-equipped Technical Center test aircraft were used in this evaluation. The 5-foot ATCRBS antenna at the Technical Center Mode S

terminal sensor was used to collect data at both the Mode S and the ARTS III sensors. Data reduction and analysis tools developed by the Technical Center were used to determine sensor performance characteristics and to highlight areas for further analysis. It was concluded that the ATCRBS mode of the Mode S sensor provided improved blip scan ratio, Mode A code, and altitude reliability performance when compared to the ARTS III. The Mode S sensor also provided better range and azimuth accuracy than the ARTS III. (Author)

AN (1) AD-A112 250/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Surveillance Simulation Testing of Terminal and en Route Mode S Sensors.

DN (9) Interim rept. Apr-Aug 80

AU (10) Frack,Robert B.

RD (11) Jan 1982

PG (12) 66 Pages

RS (14) DOT/FAA/CT-81/16

RC (20) Unclassified report

DE (23) *Discrete address beacon systems, *Radar beacons

Identification, Test methods, Detection, Surveillance, Interrogation, Configurations, Simulation, Reliability, Terminals, Targets, Reports, Simulators, Detectors, Interference, Aircraft, Environments

ID (25) Mode S sensors, Mode C reliability, Mode 3A reliability, ATCRBS(Air Traffic Control Radar Beacon System), Enroute sensors, S modes, C modes, LPN-FAA-034-241-510

AB (27) A test and evaluation (T&E) was conducted to determine the surveillance characteristics of the Mode S (formerly the Discrete Address Beacon System (DABS) en route and terminal sensors operating with effective receive beam widths of 2.4 deg. and 3.4 deg. The tests were conducted at the FAA technical Center for terminal and enroute Mode S configurations having maximum ranges of 60 and 200 nautical miles (nmi), respectively. Surveillance loading was simulated using an aircraft reply and interference environment simulator (ARIES) to provide Mode S, Air Traffic Control Radar Beacon System (ATCRBS), or a mixture of the two types of aircraft. Surveillance characteristics were measured by determining the percent detection, blip scan ratio, Mode 3/A and C reliability, Mode S identifier (ID) reliability, and the number of replies per report or interrogations per scan for both types of aircraft. It was concluded that increasing the effective receive beam width had negligible impact on the surveillance characteristics of

either sensor operating with simulated Mode S targets. Increasing the effective receive beam width improved the percent detection and Mode C reliability for both sensors operating with simulated ATCRBS targets.

AN (1) AD-A112 922/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) SRDS Technical Program Document, Fiscal Year 1982 Research and Development Approved Projects.

RD (11) Jan 1982

PG (12) 171 Pages

RS (14) DOT/FAA/RD-82/11

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic control systems

Navigational aids, Aircraft landings, Landing aids, Aviation safety, Commercial aviation, Reports, Navigation, Beacons, Automation, Airports, Weather, Radar

AB (27) This Technical Program Document (TPD) contains Research and Technology sheets which reflect Systems Research and Development Service, Federal Aviation Administration, approved projects which have significant activity occurring in Fiscal Year 1982 and beyond. These sheets contain the requirement, participating organizations, specific objectives, and milestones scheduled for accomplishment. The dates identified are in effect as of the report date (1/22/82) and are subject to change.

AN (1) AD-A114 909/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Flight Attendant Injuries: 1971-1976

AU (10) Pollard,Donell W.

Folk,Earl D.

Chandler,Richard F.

RD (11) Jan 1982

PG (12) 60 Pages

RS (14) FAA-AM-82-8

RC (20) Unclassified report

DE (23) *Aviation injuries, *Aviation safety

Aircraft cabins, Data bases, Turbulence, Inflight, Statistical data, Tables(Data), Position(Location), Case studies

ID (25) *Flight attendant

AB (27) Data from 206 reports of 377 flight attendant injuries occurring from 1971 through 1976 are summarized. These data were obtained from the Cabin Safety Data Bank of the Civil Aeromedical Institute, and are based on Federal Aviation Administration and National Transportation Safety Board accident/incident reports. Information relating to the severity and location of the injury is provided when available from original reports. Data relating to the flight condition and location in the aircraft where the injury occurred are provided. Summaries of each reported injury are included in the appendices. (Author)

AN (1) AD-A115 486/XAG

FG (2) 050500

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Summary of Federal Aviation Administration Responses to National Transportation Safety Board Safety Recommendations.

DN (9) Quarterly rept. Oct-Dec 81

AU (10) Livingston, R. E.

Carpenter, C. A.

RD (11) Jan 1982

PG (12) 412 Pages

RS (14) DOT/FAA-ASF-81-6

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *Aviation safety

Aviation accidents, Accident investigations, Federal law, Response

ID (25) Recommendations, Correspondence

AB (27) This report contains NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'Closed' by the NTSB as a result of acceptable action). Accordingly, the Table of Contents may reflect a number of multiple recommendations (example: A-81-88 through 91), but background material is included only for those recommendations which remain in an 'Open' status. Background information for those

recommendations which have been closed is available in FAA Headquarters files. (Author)

23

AN (1) AD-A116 117/XAG

FG (2) 050300

050400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PLANS

TI (6) Economic Analysis of Investment and Regulatory Decisions--A Guide.

DN (9) Final rept.

AU (10) Hoffer, Stefan N.

RD (11) 15 Jan 1982

PG (12) 139 Pages

RS (14) FAA-APO-82-1

RC (20) Unclassified report

DE (23) *Economic analysis, *Cost effectiveness, *Decision making,

*Investments, *Regulations

Civil aviation, Management planning and control, Resource management, Cost analysis, Benefits, Cost estimates, Policies, Systems approach, Planning programming budgeting, Forecasting, United States Government, Handbooks

AB (27) Every entity, whether public or private, is confronted with the economic problem: it wishes to accomplish more objectives than its resources will permit. This problem requires that two fundamental economic questions be answered: (1) what objectives should be pursued, and (2) how should these objectives be accomplished. In general, the answer to the first question is that an objective should be undertaken only when the value to be derived from undertaking it equals or exceeds what must be foregone to achieve it--its cost. The general answer to the second question is that each objective undertaken should be accomplished for the least amount of resources possible--or for the lowest cost. Economic analysis provides a systematic approach to answering the economic questions. This Handbook presents methodology for applying economic analysis to problems commonly encountered by the Federal Aviation Administration. Techniques are developed for measuring such benefits as improved safety, delay reductions, cost savings as well as others. Cost estimation methodology is also presented. (Author)

AN (1) AD-A116 543/XAG

FG (2) 010309

050100

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) A Description of Methodologies Used in Estimation of A-Weighted Sound Levels for FAA Advisory Circular AC-36-3B.

RD (11) Jan 1982

PG (12) 114 Pages

RS (14) FAA/EE-82-1, DOT/FAA/AEE-82-1

RC (20) Unclassified report

DE (23) *Aircraft noise, *Aircraft engine noise, *Computations, *Methodology Estimates, Takeoff, Aircraft landings, Propeller noise, Commercial aviation, Commercial aircraft, Specifications, Standards, Data management, Jet engine noise, Noise pollution, Statistical data, Tables(Data)

ID (25) Propeller driven aircraft, Light aircraft, FAA(Federal Aviation Administration), Noise levels, Sound levels, Certification

AB (27) This report provides a description of the assumptions, methodologies and techniques employed in arriving at estimated sound levels for many of the aircraft included in FAA Advisory Circular AC-36-3B. AC 36-3B was published to provide the public and the aviation community with comparative sound level information for aircraft currently in use. Detailed noise estimation data sheets are provided for 78 aircraft types. A table showing the difference between EPNL and dB(A) for selected jet aircraft is also provided. (Author)

AN (1) AD-A118 692/XAG

**FG (2) 050500
131200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SAFETY

TI (6) Summary of Federal Aviation Administration Responses to National Transportation Safety Board Safety Recommendations.

DN (9) Quarterly rept. Jan-Mar 82

AU (10) MacKinnon, J. H.
Carpenter, C. A.

RD (11) Jan 1982

PG (12) 148 Pages

RS (14) FAA-ASF-300-82-2

RC (20) Unclassified report

NO (21) Includes errata sheet dated 24 Aug 82.

DE (23) *Aviation safety

Aviation accidents, Accident investigations, Federal law, Response

ID (25) Recommendations, Correspondence

AB (27) This report contains NTSB (National Transportation Safety Board) recommendations and all FAA (Federal Aviation Administration) responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions.

AN (1) AD-A142 045/XAG

**FG (2) 120600
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORTS PROGRAMS

TI (6) Response to Congressional Recommendations Regarding the FAA's En Route Air Traffic Control Computer System.

RD (11) Jan 1982

PG (12) 256 Pages

RS (14) DOT/FAA/AAP-82-3

RC (20) Unclassified report

DE (23) *Air traffic control systems

Computer applications, Data processing equipment, Replacement, Requirements, Economic analysis

AB (27) Contents: Summary of Responses of Conference Committee Recommendations; Response to Conference Committee Recommendations; Appendices: (1) Meeting En Route Air Traffic Control Requirements in the 1980's and 1990's - An Option Analysis, (2) Operational Delay Day Forecasts for the Twenty Air Route Traffic Control Centers for the Years 1982 through 2011, (3) An Economic Analysis of Investment Options to Replace the En Route Center Computer System - A Quantitative Assessment of Benefits and Costs; National Airspace System Plan.

AN (1) AD-B247 067/XAG

**FG (2) 170703
050200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC AIR TRAFFIC SERVICE

TI (6) Air Traffic Control.

RD (11) 21 Jan 1982

PG (12) 315 Pages

RN (18) XH-DOT
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *HANDBOOKS
USER MANUALS, DECISION MAKING, MILITARY PUBLICATIONS, AIR TRAFFIC
CONTROLLERS
DL (33) 12

AN (1) AD-A123 037/XAG

**FG (2) 050200
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

**TI (6) Traffic Alert and Collision Avoidance System (TCAS) Symposium (3rd),
October 12-13, 1982.**

RD (11) 1982

PG (12) 313 Pages

RS (14) DOT/FAA/RD-82/75

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Symposia, *Collision avoidance, *Warning
systems

Air space, Commercial aircraft, Aviation accidents, Accident
investigations, Threat evaluation, Transponders,
Performance(Engineering), Systems analysis, Operational effectiveness

ID (25) Traffic alert

AB (27) The Federal Aviation Administration held its third symposium on Traffic
Alert and Collision Avoidance System (TCAS) in Washington, D.C.,
October 12-13, 1982, which was attended by representatives of
organizations and airlines. This report contains twelve technical
presentations describing the progress of the TCAS program. The TCAS
will provide a range of capabilities and costs which will meet the
requirements of all airspace users. The least complex part of the
system is designed for private pilots and would cost about \$2,500. The
fully capable, or airline, version would cost between \$45,000 and
\$50,000. (Author)

AN (1) AD-A109 843/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) In-Service Testing of the Precision Approach Path Indicator (PAPI) at

Newark International Airport, New Jersey.

DN (9) Interim rept. 8 Dec 80-8 Apr 81

AU (10) Castle, Bret B.

RD (11) Dec 1981

PG (12) 11 Pages

RS (14) FAA/CT-81/79

RN (18) FAA/RD-81/95

RC (20) Unclassified report

DE (23) *Approach indicators, *Glide path systems

Landing aids, Instrument landings, Flight testing, Comparison, Test and
evaluation, Civil aviation, Commercial aviation, Questionnaires,
International airports, New Jersey

ID (25) VASI(Visual Approach Slope Indicator), ILS(Instrument Landing Systems),
Wheel to eye distance, PAPI(Precision Approach Path Indicator),
LPN-FAA-081-502-510

AB (27) This report covers that portion of the Precision Approach Path
Indicator (PAPI) tests involving 4 months of in-service testing at
Newark International Airport, New Jersey. Basically, the PAPI was
compared against the standard red/white Visual Approach Slope Indicator
(VASI) system at a large airport and on a runway with an Instrument
Landing System (ILS). The PAPI system was installed in a manner to take
care of aircraft of all sizes; that is, different wheel-to-eye
distances. The information was obtained from pilots of large commercial
aircraft. Questionnaires from general aviation aircraft pilots were not
used for this particular report. Results showed that under these
conditions about 60 percent of the pilots (a total of 117
questionnaires) preferred the PAPI over the VASI system. (Author)

AN (1) AD-A110 777/XAG

**FG (2) 010500
050100**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
AND PLANS**

TI (6) Airfield and Airspace Capacity/Delay Policy Analysis

AU (10) Safeer, Harvey

Rodgers, John

Pearsall, Lawrence

Hoffer, Stefan

Pfeifer, Mark

RD (11) Dec 1981

PG (12) 59 Pages

RS (14) FAA-APO-81-14

RC (20) Unclassified report
DE (23) *Commercial aviation, *Airports, *Resource management, *Delay Capacity(Quantity), Air space, Estimates, Efficiency, Landing fields, Congestion, Mathematical prediction, Air traffic control systems, National transportation system, Data bases, Factor analysis, Cost analysis, Scheduling, Policies, Planning
ID (25) En route delay
AB (27) A general discussion of the concepts of capacity and delay at airfields and in enroute airspace precedes an estimation of present and future capacity and delay. Options to increase capacity and mitigate delay are then reviewed. The discussion is pointed towards United States air carrier airports and the users of those airports. The most detailed analysis concerns the top 39 air carrier airports and is based on data collection from three major air carriers. Potential congestion problems sufficient to impair the efficiency of national transportation are found to be possible at 19 major airports by 1991. Remedies to such congestion are described for 12 airports, but presently known resources are expected to be insufficient to satisfy the potential demand at 7 airports.

AN (1) AD-A112 924/XAG
FG (2) 010309
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) General Aviation Activity and Avionics Survey 1980.

DN (9) Annual summary rept. for CY 1980

AU (10) Schwenk, Judith C.
Edwards, Carolyn N.

RD (11) Dec 1981

PG (12) 205 Pages

RS (14) FAA-MS-81-5

RC (20) Unclassified report

NO (21) See also AD-A097 604.

DE (23) *CIVIL AVIATION, *AVIONICS

STATISTICAL ANALYSIS, TABLES(DATA), FLIGHT, TIME STUDIES, UNITED STATES, COMMERCIAL AIRCRAFT, AIRCRAFT ENGINES, TURBOPROP ENGINES, AIRCRAFT EQUIPMENT, COMMUNICATION EQUIPMENT, NAVIGATIONAL AIDS, AIRFRAMES, FUEL CONSUMPTION, JET ENGINES, MISSIONS, GEOGRAPHICAL DISTRIBUTION, STATISTICAL DATA

ID (25) General aviation, Fleets(Aircraft)

AB (27) This report presents the results and a description of the 1980 General

Aviation Activity and Avionics Survey. The survey was conducted during 1981 by the FAA to obtain information on the activity and avionics of the United States registered general aviation aircraft fleet, the dominant component of civil aviation in the U.S. The survey was based on statistically selected sample of about 14.0 percent of the general aviation fleet and obtained a response rate of 65 percent. Survey results are based upon responses but are expanded upward to represent the total population. Survey results revealed that during 1980 an estimated 41.0 million hours of flying time were logged by the 211,045 active general aviation aircraft in the U. S. fleet, yielding a mean annual flight time per aircraft of 190.5 hours. The active aircraft represented about 83 percent of the registered general aviation fleet. The report contains breakdowns of these and other statistics by manufacturer/model group, aircraft type, state and region of based aircraft, and primary use. Also included are fuel consumption, lifetime airframe hours, avionics, and engine hours estimates. (Author)

AN (1) AD-A114 906/XAG

FG (2) 040100
240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Federal Aviation Administration: High Altitude Pollution Program, Third Biennial Report Prepared in Accordance with the Stratospheric Ozone Protection Provision, Section 153(g), of the Clean Air Act Amendments of 1977.

DN (9) Rept. for Jan 80-Dec 81.

RD (11) Dec 1981

PG (12) 43 Pages

RS (14) FAA-EE-82-09

RC (20) Unclassified report

NO (21) See also report dtd Dec 79, AD-A081 520.

DE (23) *Air pollution, *Aircraft exhaust, *Environmental impact, *Ozone Stratosphere, High altitude, Ozone layer, Depletion, Emission, Nitrogen oxides, Reaction kinetics, Atmospheric chemistry, Atmosphere models, Legislation, Environmental protection

AB (27) The impact of high altitude aviation on stratospheric ozone is now believed to be a decrease in total columnar ozone for flights above 15 km (about 49, 000 feet). The model calculations also show that the current subsonic fleet (and the fleet foreseeable to 1990) will result in a net ozone increase of about 1 percent, considering normal flight altitudes. Whatever the net change in total column ozone, increases or

depletions will occur at different altitudes. These are expected to have subtle influences on atmospheric circulation, the effects of which are only beginning to be understood. As a formal program, the High Altitude Pollution Program will be terminated in 1982 with the issuance of a final report. The FAA will continue to maintain and update, as appropriate, its capability to make quantitative assessments of the environmental effects of cruise-altitude emissions, and will monitor and assist, as possible, other research programs, both here and abroad.

AN (1) AD-A116 363/XAG

FG (2) 010311

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Helicopter Noise Definition Report UH-60A, S-76, A-109, 206-L.

DN (9) Final rept.

AU (10) Newman, J. Steven

Rickley, Edward J.

Ford, David W.

RD (11) Dec 1981

PG (12) 687 Pages

RS (14) DOT-FAA-EE-81-16

RC (20) Unclassified report

NO (21) Errata sheet inserted.

AL (22) Availability: Document partially illegible.

DE (23) *AIRCRAFT NOISE, *ACOUSTIC DATA, *HELICOPTERS, *AIRCRAFT ENGINE NOISE

ACOUSTIC MEASUREMENT, TEST EQUIPMENT, TEST METHODS, STANDARDS, SPECIFICATIONS, METEOROLOGICAL DATA, BALLOONS, RADIOSONDES,

UTILITY

AIRCRAFT, REPORTS

ID (25) UH-60A aircraft

AB (27) This document presents noise data for the Sikorsky UH-60A Blackhawk, the Sikorsky S-76 Spirit, the Agusta A-109 and the Bell 206-L. The acoustical data are accompanied by phototeodolite tracking data, cockpit instrument panel photo data, and meteorological data acquired from radiosonde balloons. Acoustical metrics include both noise certification metrics (EPNL, PNL, PNL) as well as community/airport noise assessment metrics (SEL, dBA). Noise data have been acquired systematically to identify variations in level with variations in helicopter airspeed and altitude. Data contained in this report provide essential information for development of helicopter noise exposure

contours as well as further evaluation of ICAO helicopter noise certification standards. Accordingly, this information will be of interest to helicopter manufacturers, airport planning consultants, acoustical engineers and airport managers. This report serves as a noise definition document establishing baseline acoustical characteristics of the test helicopters. (Author)

23

AN (1) AD-A119 358/XAG

FG (2) 010309

010600

050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft. Calendar Year 1981.

DN (9) Annual rept.

RD (11) 31 Dec 1981

PG (12) 311 Pages

RS (14) FAA-AMS-220

RC (20) Unclassified report

DE (23) *COMMERCIAL AIRCRAFT, *TRANSPORT AIRCRAFT, *CIVIL AVIATION PASSENGER AIRCRAFT, INVENTORY, SURVEYS, UNITED STATES, STATISTICAL DATA, TABLES(DATA)

ID (25) Census

AB (27) This report presents information about the U.S. civil aircraft fleet.

It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner. (Author)

AN (1) AD-A128 693/XAG

FG (2) 010500

010600

050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1981.

DN (9) Annual rept.

RD (11) 31 Dec 1981

PG (12) 196 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic, *Handbooks
Aviation accidents, Commercial aviation, Statistical data, Airports,
Terminal flight facilities, Passengers, International airports,
Tables(Data), Aeronautics, Air transportation

ID (25) General aviation

AB (27) This report presents statistical information pertaining to the Federal
Aviation Administration, the National Airspace System, Airports,
Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents,
Aeronautical Production and Imports/Exports, and a Glossary of the
terms used in this publication. (Author)

AN (1) AD-B246 245/XAG
FG (2) 010400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Air Traffic Service Recovery and Revitalization Plan
RD (11) 22 Dec 1981
PG (12) 53 Pages
RN (18) XH-DOT/FAA
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.
DE (23) *AIR TRAFFIC CONTROL SYSTEMS
RECOVERY, COMMERCIAL AVIATION, AVIATION SAFETY, AVIATION PERSONNEL
ID (25) NATIONAL AIRSPACE SYSTEM PLAN
DL (33) 12

AN (1) AD-A108 878/XAG
FG (2) 120200
**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**
TI (6) Analysis of a Nonlinear Altitude Tracking Method.
DN (9) Final rept. Sep-Dec 80
AU (10) Billmann, Barry R.
RD (11) Nov 1981
PG (12) 57 Pages
RS (14) FAA-CT-81/15
RN (18) FAA/RD-81/60
RC (20) Unclassified report
DE (23) *Aviation safety, *Collision avoidance, *Algorithms, *Tracking
Altitude, Nonlinear systems, Error analysis, Accuracy,
Performance(Engineering), Flight testing, Performance tests, Rate of
climb indicators, Radar beacons, Data rate, High rate

ID (25) *BCAS(Beacon Collision Avoidance System), LPN-FAA-052-242-320

AB (27) This report analyzes the performance of the nonlinear altitude tracker
developed for the Active Beacon Collision Avoidance System (BCAS) by
Lincoln Laboratory. The tracker is intended for use in the collision
avoidance logic of the BCAS system. The nonlinear tracker performance
was characterized through comparisons with the previous altitude
tracker. The original tracker, used by the collision avoidance logic,
was a simplistic alpha-beta tracker. The nonlinear tracker performance
evaluation was conducted in three phases: (1) The stand-alone error
characteristics of the tracker were obtained. Simulated mode C report
sequences were provided directly to the tracker. (2) The nonlinear
tracker was integrated directly into the collision avoidance logic.
With the use of the Fast-Time Encounter Generator (FTEG), a comparative
study of performance with the nonlinear tracker versus the alpha-beta
tracker was made. (3) Selected live flight test encounters were used to
analyze the relative performance of the alpha-beta tracker versus the
nonlinear tracker. The stand-alone analysis revealed that the nonlinear
tracker consistently had smaller maximal errors in vertical rate
estimation and a smaller transient rate response delay than did the
alpha-beta tracker. Both the live flight test encounter simulations and
the FTEG scenario simulation indicated that nonlinear tracking often
caused an increase in separation for encounters with vertically
accelerating threats and reduced occurrences of incorrect command sense
choice. (Author)

AN (1) AD-A108 924/XAG
FG (2) 010305
230200
**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**
**TI (6) Transport Aircraft Cockpit Standardization (Federal Aviation
Regulations Part 25).**
DN (9) Final rept.
AU (10) Sulzer, Richard
RD (11) Nov 1981
PG (12) 42 Pages
RS (14) FAA-CT-80-54
RN (18) FAA-EM-81/11
RC (20) Unclassified report
DE (23) *Cockpits, *Transport aircraft, *Aeronautical engineering, *Man machine
systems
Systems engineering, Standards, Regulations, Flight instruments, Flight
control systems, Altimeters, Keyboards, Specifications, Human factors

engineering, Pilots, Qualifications, Computer programs, Digital systems, Metric system, Airworthiness

AB (27) The present status of transport aircraft cockpit standardization was evaluated by examination of regulations and other design practice documents and by interviews with airline pilots and engineers. Flight critical areas most in need of increased standardization were identified as (1) primary flight guidance instrumentation and (2) pilot input keyboards. Additional areas proposed for further industry consultation, possibly leading to further standardization at a future date, include flap, slat, and leading-edge device control and display systems; indicated airspeed (IAS)-Mach indicators; powerplant instrumentation; and electric and hydraulic power diagrams, displays, and controls. The continued use of a mixed metric and English unit measurement plan in both United States and foreign manufactured aircraft is noted, and the incidence of pilot dual qualifications and the need for criteria for digital system software certification are also discussed.

AN (1) AD-A110 357/XAG

FG (2) 010300

010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semi-annual rept. no. 14, 1 Jan-30 Jun 81.

RD (11) 09 Nov 1981

PG (12) 41 Pages

RS (14) FAA-ACS-82-14

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Civil aviation, *Security

Aircraft hijacking, Aviation safety, Threat evaluation, Bombs, Passengers, Congress

ID (25) Bomb threat, Passenger screening

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

SE (34) 14

AN (1) AD-A107 325/XAG

FG (2) 120600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) High-Speed Rotary Printing Device for Air Traffic Control Applications: A Preliminary Evaluation.

DN (9) Final rept. Aug 80-Apr 81

AU (10) Spanier, Gerard

RD (11) Oct 1981

PG (12) 16 Pages

RS (14) FAA-CT-81-59

RN (18) FAA/RD-81/73

RC (20) Unclassified report

DE (23) *Printers(Data processing)

Air traffic control systems, Data displays, Contact printers, Man computer interface, Systems analysis, Computer applications, Test and evaluation, High rate, Microprocessors

ID (25) Rotary printers, High speed printers, LPN-FAA-219-151-130

AB (27) This report describes a unique, high-speed rotary printing device evaluated by the Federal Aviation Administration (FAA) Technical Center to determine potential applicability in air traffic control (ATC) work stations. The report discusses general performance of the unit, basic ATC operational problems being addressed by the study, concepts of application, and future activities for more comprehensive evaluations in simulated and real work station environments. (Author)

AN (1) AD-A107 326/XAG

FG (2) 010300

040100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) First Annual Workshop on Aviation Related Electricity Hazards Associated with Atmospheric Phenomena and Aircraft Generated Inputs, February 26-27, 1980

AU (10) Traybar, Joseph J.

Rasch, Nickolus O.

RD (11) Oct 1981

PG (12) 38 Pages

RS (14) FAA-CT-81-205

RC (20) Unclassified report

DE (23) *Aviation safety, *Atmospheric electricity

Workshops, Hazards, Transients, Avionics, Lightning, Electromagnetic compatibility, Research management, Information systems, Regulations

ID (25) LPN-FAA-182-340-100

AB (27) This workshop was to bring together the various elements of the agency to engage in discussions to identify aviation related electricity hazards associated with both atmospheric phenomena and aircraft generated inputs, and determine a prioritize specific FAA problem area and/or requirements that need to be addressed. This information is vital in the development of the agency's posture and requirements in this important technology area. (Author)

AN (1) AD-A107 327/XAG

FG (2) 010100

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Microwave Landing System Flare Subsystem Test.

DN (9) Data rept. for period ending Apr 79

AU (10) Jezierski, Carl B.

RD (11) Oct 1981

PG (12) 43 Pages

RS (14) FAA-CT-81-61

RC (20) Unclassified report

DE (23) *Microwave landing systems, *Flareout

United States Government, C band, Airborne, Aircraft, Instrumentation, Aeronautics, Tracking, Plotting, Theodolites, Errors

ID (25) Motion noise, LPN-FAA-075-725-420

AB (27) Microwave Landing System (MLS) Flare subsystem performance data were collected on a specially instrumented Federal Aviation Administration (FAA) Technical Center aircraft. The airborne data were compared with a theodolite tracking system reference and error plots generated. Due to extensive lightning damage only two flight tests were performed. Flare subsystem accuracy could not be determined because of insufficient data. (Author)

AN (1) AD-A107 855/XAG

FG (2) 090100

170703

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250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Investigation of Wilcox Model 585B Very High Frequency Omnidirectional Radio Range (VOR) System. Part 3.

DN (9) Final rept. Mar 80-Feb 81

AU (10) Bell, Wayne E.

RD (11) Oct 1981

PG (12) 53 Pages

RS (14) FAA-CT-81-46

RN (18) FAA-RD-81-52

RC (20) Unclassified report

NO (21) See also Part 2, AD-A099 525.

DE (23) *Radio beacons, *Position finding, *Air traffic control systems, *Solid state electronics

Antenna components, Test and evaluation, Range(Distance), Ground level, Test methods, Spectrum analyzers, Near field, Very high frequency, Field equipment, Aircraft, Far field, Reduction, Extendable structures, Tolerance, Errors, Length, Industries, Detectors, Radomes, Modulation, Manuals

ID (25) VOR(Very High Frequency OMNIdirectional Radio Range), Counterpoises, Slotted cylinder antennas, LPN-FAA-041-305-830

AB (27) A three-part investigation of the Wilcox 585B Very High Frequency Omnidirectional Radio Range (VOR) System was conducted. In Part 1, the magnitude of the ground error was reduced by modification and suitable adjustment of antenna element lengths of the field detector. In Part 2, investigation developed an acceptable calibration procedure for system 30 hertz (Hz) modulation. Obtaining compatible 30 Hz modulation reading between aircraft (far-field) and edge of counterpoise (near-field) measurements was an additional requirement. In Part 3, tests resolved any discrepancies in the tuning adjustments prescribed by the manufacturer's equipment manuals. This report, which is the last in a series of three, contains an outline of the tests and procedures for setting the lengths of the adjustable field detector elements, a recommended procedure for obtaining compatible near-field and airborne 30 Hz modulation readings, and recommended changes to the manufacturer antenna tuning procedures in order that the system meet required operational tolerances. (Author)

AN (1) AD-A110 583/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Final Regulatory Evaluation: Metropolitan Washington Airports Policy

AU (10) Pearsall, Lawrence A.

Samuelson, Douglas A.
RD (11) Oct 1981
PG (12) 187 Pages
RS (14) FAA-APO-81-12
RC (20) Unclassified report
DE (23) *Airports
District of Columbia, Virginia, Operation, Regulations, Federal law, Modification, Air transportation, Aircraft noise, Delay, Economic analysis
ID (25) Washington National Airport
AB (27) This final regulatory evaluation examines the potential impacts of rules to be applied to aircraft operations at Washington National Airport. These rules are part of the overall policy toward the development of Washington National Airport and Dulles International Airport. The alternative economic impacts on airlines, passengers, communities and the FAA of imposing passenger ceilings, operations quotas, landing fees, perimeter rules, curfews, and noise restrictions under various scenarios are assessed in this evaluation, and the final rule is specifically addressed in the final Chapter. The quantifiable impacts of this rule are estimated at a \$27 million net cost to society, but this net cost is believed to be outweighed by benefits which cannot be measured. (Author)

AN (1) AD-A115 485/XAG
FG (2) 050500
131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SAFETY
TI (6) Summary of Federal Aviation Administration Responses to National Transportation Safety Board Safety Recommendations.
DN (9) Quarterly rept. Jul-Sep 81
AU (10) Livingston, R. E.
Carpenter, C. A.
RD (11) Oct 1981
PG (12) 320 Pages
RS (14) DOT/FAA-ASF-81-5
RC (20) Unclassified report
AL (22) Availability: Document partially illegible.
DE (23) *Aviation safety
Aviation accidents, Accident investigations, Federal law, Response
ID (25) Recommendations, Correspondence
AB (27) This report contains NTSB recommendations and all FAA responses to

Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'Closed' by the NTSB as a result of acceptable action). Accordingly, the Table of Contents may reflect a number of multiple recommendations (example: A-81-36 through 38), but background material is included only for those recommendations which remain in an 'Open' status. Background information for those recommendations which have been closed is available in FAA Headquarters files. (Author)
23

AN (1) AD-A105 199/XAG
FG (2) 090500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Evaluation of Cathode-Ray Tube Protection for the Electronic Tabular Display Subsystem (ETABS) Engineering Model.
DN (9) Final rept. Jan 80-Jan 81
AU (10) Wilson, Anthony R.
RD (11) Sep 1981
PG (12) 17 Pages
RS (14) FAA/CT-81/66
RN (18) FAA/RD-81/26
RC (20) Unclassified report
DE (23) *Cathode ray tubes, *Protection, *Performance tests
Safety, Requirements, Air pressure, Implosions, Rectangular bodies, Air traffic control systems, Display systems, Test and evaluation, Experimental data
ID (25) ETABS(Electronic Tabular Display Subsystem), Kimcode safety rimband device, LPN-FAA-124-111-820
AB (27) This report describes the safety evaluation of the 25-inch (diagonal) rectangular cathode-ray tube (CRT) that is used in the engineering model of the Electronic Tabular Display Subsystem (ETABS). An evaluation of ETABS will be performed at the Federal Aviation Administration (FAA) Technical Center for possible application in FAA Air Route Traffic Control Centers (ARTCC). The safety evaluation included standard industry pressure testing and special implosion testing on 12 CRT samples. Eleven of the twelve CRT samples satisfactorily met the safety requirements for both the pressure and implosion testing. One CRT cracked when subjected to 45 pounds per

square inch (psi) of air pressure; however, the CRT did not implode. The 25-inch rectangular CRT will therefore provide a high degree of safety for use in each of the two tabular displays of the ETABS engineering model. (Author)

AN (1) AD-A105 958/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Second Quarterly Data Report for Reliability and Maintainability Evaluation of the Basic Wide Microwave Landing System at Wallops Island, Virginia.

DN (9) Data rept. 1 Aug-31 Oct 80

AU (10) Plotka,Marvin S.

RD (11) Sep 1981

PG (12) 21 Pages

RS (14) FAA-CT-81-43

RC (20) Unclassified report

DE (23) *Microwave landing systems, *Distance measuring equipment Test and evaluation, Time, Value, Mean, Reliability, Maintainability, Virginia

ID (25) *Wallops Island, MTBF(Mean Time Distance Measuring Equipment), PDME(Precision Distance Measuring Equipment)

AB (27) This is the second quarterly data report on the reliability and maintainability evaluation of the Basic Wide Microwave Landing System located at Wallops Island, Virginia. It covers the period August 1 through October 31, 1980. Chargeable failures are listed, and calculated reliability values are presented. System and subsystem mean time between failure (MTBF) and mean time to repair (MTTR) measured values are included. System MTBF's are compared with predicted and specified values. (Author)

AN (1) AD-A106 484/XAG

FG (2) 010500

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Metropolitan Washington Airports Policy Supplement to the August 1980 Environmental Impact Statement.

DN (9) Final rept.

RD (11) Sep 1981

PG (12) 119 Pages

RC (20) Unclassified report

DE (23) *Environmental impact statements, *Airports, *Policies, *Legislation Noise pollution, Air pollution, Air quality, Ground traffic, Air traffic, Management, Scheduling, Limitations, Pollution abatement, Environmental protection, Regulations, Public safety, Energy conservation, Fuel consumption, Aircraft, District of Columbia

AB (27) This Final Supplement to the August 1980 Environmental Impact Statement considers the potential environmental impacts of additional policy alternatives that are being added to the five alternatives previously assessed. A revised policy is being adopted, reflecting the Department's objective for establishing how Washington National and Dulles International Airports will contribute to meeting the overall aviation needs of the Metropolitan area in the 1980s and beyond. The revised policy considers: Passenger limit; Operating hours; Scheduling limitations; Noise limitations; Aircraft limitations; Nonstop limitations. A Metropolitan Washington Airport Policy will be selected from within the range of these alternatives. (Author)

AN (1) AD-A107 805/XAG

FG (2) 010200

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Active Beacon Collision Avoidance Logic Evaluation. Volume II. Collision Avoidance (BCAS) Threat Phase.

DN (9) Final rept. Apr 79-Jun 80

AU (10) Adkins,A.

Thomas,J.

Billmann,B.

Windle,J.

RD (11) Sep 1981

PG (12) 59 Pages

RS (14) FAA-CT-80-51-2

RN (18) FAA-RD-80-125-2

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A102 163.

DE (23) *Collision avoidance, *Radar beacons, *Aviation safety, *Warning systems

Surveillance, Flight testing, Multiple operation, Parameters, Horizontal orientation, Vertical orientation, Beacons, Performance(Engineering), Rates, Functions, Phase, Tracking, Aircraft, Modification, Resolution, Maneuvers, Prototypes, Noise, Threats, Logic, Separation, Algorithms

ID (25) CIR(Conflict Indicator Registers), VMD(Vertical Miss Distance), BCAS(Beacon Collision Avoidance System)

AB (27) The purpose of this project was to evaluate and refine the April 1979 version of the Beacon Collision Avoidance System (BCAS) logic prior to Active BCAS prototype flight testing. The April 1979 version of the BCAS logic added changes to support multiple aircraft conflict resolution, Conflict Indicator Register (CIR) interfacing and new surveillance logic interfacing. The results of the first phase of the Active BCAS logic, evaluating the Air Traffic Control Radar Beacon System (ATCRBS) threat phase, identified several improvements that should be made to the BCAS logic. These improvements were incorporated into the logic prior to beginning the second phase, the BCAS equipped threat phase. The second phase was conducted from September to November 1979 and was designed to evaluate the BCAS performance against BCAS equipped threats. The results are presented in this report. Several logic improvements have been identified. These changes have been implemented in both the threat logic and the BCAS command coordination logic (CIR logic). In general, BCAS performance for equipped threats was not as sensitive to vertical rate tracker noise as in the ATCRBS threat case. Resolution performance has been improved through a reduction in undesirable BCAS alarms and by reducing excessive separation with the inclusion of a projected vertical miss distance (VMD) filter for equipped threats. A better method of selecting threat volume parameters has been incorporated.

AN (1) AD-A118 255/XAG

FG (2) 010300

050100

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PLANS

TI (6) Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs

AU (10) Keech,Ward L.

RD (11) Sep 1981

PG (12) 80 Pages

RS (14) FAA-APO-81-3

RC (20) Unclassified report

DE (23) *Management planning and control, *Economic analysis, *Aeronautics, *Air transportation

Federal law, Value, Investments, Regulations, Cost analysis, Life expectancy, Aviation injuries, Replacement, Repair, Time, Operational

effectiveness, Policies

ID (25) FAA(Federal Aviation Administration) Project

AB (27) Drawing on economic theory, empirical investigations and data from government, private and academic literature, this report updates economic values commonly used by the Federal Aviation Administration in the evaluation of investment and regulatory programs. These values, commonly referred to as 'critical values', provide the basis upon which the effectiveness of the aviation system or changes therein may be denominated and assessed in monetary terms. The critical values updated in this report include the value of time of air travelers, the value of a statistical life, unit costs of statistical aviation injuries, unit replacement and restoration costs of damaged aircraft, and aircraft variable operating costs. (Author)

AN (1) AD-A138 414/XAG

FG (2) 170703

170900

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CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Discrete Address Beacon System (DABS)/Air Traffic Control Radar Beacon System (ATCRBS) Electromagnetic Compatibility Studies.

DN (9) Final rept. May 79-Jul 80

AU (10) Wapelhorst,L.

Hazelwood,C.

Pagano,T.

RD (11) Sep 1981

PG (12) 108 Pages

RS (14) DOT/FAA/CT-81-27

RN (18) DOT/FAA/RD-81/18

RC (20) Unclassified report

DE (23) *Discrete address beacon systems, *Radar beacons, *Air traffic control systems, *Electromagnetic compatibility Detectors, Analog to digital converters, Compatibility, Test methods, Terminal flight facilities, Buffers, Automation, Environments, Degradation, Overload, Rates, Terminals, Reports, Fruits, Radar

ID (25) DABS(Discrete Address Beacon System)

AB (27) This report describes the test procedures and results of the Discrete Address Beacon System (DABS) and Air Traffic Control Radar Beacon System (ATCRBS) compatibility studies performed at the Federal Aviation Administration (FAA) Technical Center. Four terminal ATCRBS processors: Automated Radar Terminal System (ARTS III), ARTS IIIA Sensor Receiver and Processor (SRAP), ARTS II, an AN/TPX-42, and the en route common

digitizer were subjected to various anticipated DABS/ATCRBS asynchronous reply (fruit) environments. Maximum expected DABS fruit rates will not degrade performance of facilities using defruited video. The common digitizer, which does not employ a defruiter, performed with no significant degradation in the various DABS fruit environments. The SRAP, which is planned to be implemented interterminal facilities to replace the existing ARTS III Beacon Data Acquisition Subsystem (BDAS), will experience overloading of reply and report buffers by the addition of DABS fruit if a defruiter is not used. A defruiter eliminates the overload conditions to the expected maximum DABS fruit rate but adversely affects the SRAP performance.

AN (1) AD-A179 702/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA (Federal Aviation Administration) Air Traffic Activity; Fiscal Year 1981

AU (10) Carter, Patricia
Trembley, Nancy

RD (11) 30 Sep 1981

PG (12) 234 Pages

RC (20) Unclassified report

AL (22) Availability: Microfiche copies only.

DE (23) *AIR TRAFFIC CONTROL TERMINAL AREAS, *AIRPORT CONTROL TOWERS AIR TRAFFIC, CONTROL CENTERS, FLIGHT, INTERNATIONAL, STATIONS, STATISTICAL DATA, TOWERS

AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), Combined Station Towers (CS/Ts), International Flight Service Stations (IFSSs), and Approach Control Facilities. Keywords: Tables(data); Statistical data.
25

AN (1) AD-A105 063/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Prompt Detection of Aircraft Maneuvers by Use of Range Rate Radar Data.

DN (9) Final rept.

AU (10) Shannon, James A.

RD (11) Aug 1981

PG (12) 46 Pages

RS (14) FAA/RD-81/62

RC (20) Unclassified report

DE (23) *Radar tracking, *Range finding

Flight testing, Standard deviation, Long range(Distance), Position(Location), Measurement, Safety, Conflict, Patterns, Targets, Resolution, Maneuvers, Rates, Tracking, Detection, Aircraft, Radar, Accuracy, Velocity

ID (25) MTD(Moving Target Detection), Maneuver detection, Rates(Range), Heading(Aircraft)

AB (27) In addition to the usual range and bearing information concerning aircraft targets, the next generation of long range radars can have the capability of measuring directly a component of velocity. An investigation was conducted to determine first, the accuracy with which target velocity can be measured and secondly, how these velocity data can be exploited so as to better predict aircraft position. A B727 was flown in a special pattern, which included many maneuvers, at a distance of about 100 nmi from a prototype of the velocity measuring radar. The standard deviation of the measurement of the component of velocity was found to be less than 1.3 knots. The velocity data from the test flight were subjected to processing by a tracker which calculates changes in aircraft heading from changes in velocity component. The results are promising. In all maneuver were immediately detected and the velocity vectors constructed by the tracker followed closely the vectors flown by the aircraft. The beneficial consequences of incorporating a tracker using velocity data are pointed out. An example is given comparing the automatic of a potential conflict using the conventional tracker and then the tracker which processes velocity data. In the example the use of such data is vital to a safe resolution.

AN (1) AD-A105 196/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Moving Target Detector/Airport Surveillance Radar (ASR-7) Field Evaluation.

DN (9) Final rept. Feb 79-Jan 80

AU (10) Goodchild,W.
RD (11) Aug 1981
PG (12) 52 Pages
RS (14) FAA-CT-81-31
RN (18) FAA-RD-81-57
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Search radar, *Moving target indicators,
*Airport radar systems
Target detection, False alarms, Moving targets, Test and evaluation,
Processing equipment, Dynamic range, Vermont, Field conditions,
Velocity, Surveillance, Response, Processing, Synchronism, Rates,
Visibility, Radar, Probability, Channels, Clutter, Airports, Detection
ID (25) ASR(Airport Surveillance Radar), LPN-FAA-022-243-810
AB (27) The Moving Target Detector (MTD) II, a sophisticated radar processor,
was evaluated to determine its capability to provide improved radar
detection in an air traffic control (ATC) environment. The MTD II was
installed on one channel of an airport surveillance radar (ASR-7) at
Burlington, Vermont. The major objective of testing was to compare the
performance of the MTD II with that of the ASR-7 Moving Target
Indicator (MTI). This report concentrates on the comparative
probability of detection, false alarm rate, MTI improvement factor,
subclutter visibility, dynamic range, velocity response, and the
simultaneous flight test results of the two systems. Comparison of the
MTD II to the MTD I system is made when necessary to show major
improvements or deficiencies in the MTD II design. The results of the
tests have shown that the MTD II provides surveillance capabilities
superior to those of the ASR-7/MTI. (Author)

AN (1) AD-A107 947/XAG
FG (2) 061000
061500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE
TI (6) A Comparison of Some Effects of Three Antimotion Sickness Drugs on
Nystagmic Responses to Angular Accelerations and to Optokinetic Stimuli
AU (10) Collins,William E.
Schroeder,David J.
Elam,Gary W.
RD (11) Aug 1981
PG (12) 27 Pages
RS (14) FAA-AM-81-16
RC (20) Unclassified report

DE (23) *Drugs, *Motion sickness
Nystagmus, Physiological effects, Angular acceleration, Stimuli
ID (25) *Antimotion sickness drugs, LPN-FAA-AM-A-80/81-PSY-86,
LPN-FAA-AM-D-77/78-PSY-62
AB (27) This study examined the influence of three established antimotion
sickness drugs on nystagmic eye movement responses to angular
acceleration (whole-body movement) with vision either permitted or
denied, and to optokinetic stimulation (visual field movement).
Dimenhydrinate and promethazine hydrochloride, particularly at higher
does levels, reduced optokinetic nystagmus, thereby making less
accurate the following ability of the eye. During whole-body motion in
darkness, there was little placebo-drug difference in the vestibular
response under alert conditions; under relaxed conditions,
dimenhydrinate and promethazine hydrochloride produced significant
declines in the vestibular eye movements. These same drugs also
interfered with the ability of the individual to fixate adequately on a
visual task during motion. Subjects who received a combination of
promethazine plus d-amphetamine were able to suppress vestibular eye
movements under the task condition and maintain good visual fixation.
Thus, the effect of a drug on nystagmus may be a poor indicator of its
value in preventing motion sickness. Moreover, assessments of
antimotion sickness drugs for many practical situations should include
as a possible adverse side effect the inability to maintain visual
fixation during motion.

AN (1) AD-A108 876/XAG
FG (2) 010600
050100
120100
120500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ
TI (6) Workshop on Mathematical Fire Modeling, March 24-27, 1981.
AU (10) Foo,O. K.
RD (11) Aug 1981
PG (12) 227 Pages
RS (14) FAA-CT-81/209
RC (20) Unclassified report
DE (23) *Aircraft fires, *Mathematical models, *Workshops
Computerized simulation, Computer programs, Civil aviation, Aviation
safety, Fires, Flames, Heat flux, Combustion, Heat transfer, Materials,
Hydrocarbons, Thermochemistry, Plastics, Aircraft cabins, Dynamics
ID (25) DACFIR model

AB (27) Contents: Aircraft Fire Scenarios; FAA Modeling Efforts; DACFIR Model Workshop; Correlation Work and Flame Spread; Unsafe Code Applied to Aircraft Cabin Fire Modeling; Modeling Heat Fluxes for Aircraft; Enclosure Models Applied to Aircraft; Thermochemical Modeling of Burning Aircraft Materials; and Enclosure Fire Dynamics Model for Interior Cabin Fires.

AN (1) AD-A109 170/XAG

FG (2) 061000

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Comparison of Some Effects of Three Antimotion Sickness Drugs on Nystagmic Responses to Angular Accelerations and to Optokinetic Stimuli

AU (10) Collins, William E.

Schroeder, David J.

Elam, Gary W.

RD (11) Aug 1981

PG (12) 28 Pages

RS (14) FAA-AM-81-16

RC (20) Unclassified report

DE (23) *Motion sickness, *Antihistaminics, *Drugs, *Vestibular apparatus Nystagmus, Stimulation(Physiology), Prevention, Angular acceleration, Preventive medicine, Response(Biology), Pilots, Reduction, Signs and symptoms, Eye movements, Interactions, Visual acuity

ID (25) *Antimotion sickness agents, Depressants, Analeptics, *Dimenhydrinate, *Promethazine, *Dextroamphetamine

AB (27) In aviation, some pilot trainees experience motion sickness early in their training and drug remedies are not prohibited when prescribed for dual flights. Moreover, some motion sickness preventives do not require prescriptions. In addition, spouses or business associates often accompany private pilots on flying trips; some of these passengers, who may be required to pilot the aircraft in an emergency, use antimotion sickness drugs. While the basic efficacy of such drugs is rooted in the reduction of motion sickness symptoms, adverse side effects are important practical considerations of their usage in aviation. This study examined the influence of three established antimotion sickness drugs on nystagmic eye movement responses to angular acceleration (whole-body movement) with vision either permitted or denied, and to optokinetic stimulation (visual field movement). Dimenhydrinate and promethazine hydrochloride, particularly at higher dose levels, reduced optokinetic nystagmus, thereby making less accurate the following

ability of the eye. During whole-body motion in darkness, there was little placebo-drug difference in the vestibular response under alert conditions; under relaxed conditions, dimenhydrinate and promethazine hydrochloride produced significant declines in the vestibular eye movements. These same drugs also interfered with the ability of the individual to fixate adequately on a visual task during motion. Subjects who received a combination of promethazine plus d-amphetamine were able to suppress vestibular eye movements under the task condition and maintain good visual fixation.

AN (1) AD-A103 575/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Multisite Testing of the Discrete Address Beacon System (DABS).

DN (9) Interim rept. Mar-Sep 80

AU (10) McMillen, J. L.

Davis, J. W.

Spadea, R. J., Jr

RD (11) Jul 1981

PG (12) 63 Pages

RS (14) FAA-CT-81-9

RN (18) FAA-RD-81-49

RC (20) Unclassified report

NO (21) See also AD-A085 585.

DE (23) *Discrete address beacon systems

Compatibility, Air traffic control systems, Radar beacons, Field tests, Networks, Aerial reconnaissance, Data links, Communication equipment, Base lines, Transponders

ID (25) LPN-FAA-034-241-510

AB (27) This report contains results of tests performed in an environment of multiple Discrete Address Beacon System (DABS) sensors, one each located at Clementon and Elwood, New Jersey, and the Federal Aviation Administration (FAA) Technical Center, Atlantic City Airport, New Jersey. These DABS sensors were tested in various degrees of intersensor communication that ranged from a full network of connected sensors to a fully nonnetted configuration. The multiple DABS sensors were tested in four major areas: network management, surveillance processing, data link processing, and intersensor communications. It is concluded that the performance of the DABS sensors in multisite configurations meets or exceeds the requirements specified in the DABS engineering requirement (FAA-ER-240-26). (Author)

AN (1) AD-A103 894/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) En Route Discrete Address Beacon System/Air Traffic Control (Build I) technical Testing.
DN (9) Interim rept. Jun 79-May 80
AU (10) Copes,Robert E., III
Dardano,Richard V.
RD (11) Jul 1981
PG (12) 35 Pages
RS (14) FAA-CT-80-30
RN (18) FAA-RD-81-31
RC (20) Unclassified report
DE (23) *Discrete address beacon systems, *Air traffic control systems, *Data processing
Surveillance, Data transmission systems, Communications networks, Detectors, Civil aviation
ID (25) DABS(Discrete Address Beacon System), ATCRBS(Air Traffic Control Radar Beacon System), CIDIN(Common ICAO Data Interchange Network), ICAO(International Civil Aviation Organization), LPN-FAA-122-115-540
AB (27) Tests of the Discrete Address Beacon System (DABS) in an air traffic control (ATC) en route National Airspace System (NAS) environment were conducted at the Federal Aviation Administration (FAA) Technical Center. These tests included: (1) surveillance performance in the areas of track initiation, track continuity, and track swap; and (2) surveillance related communication responses employing the Common International Civil Aviation Organization (ICAO) Data Interchange Network (CIDIN) protocol for Air Traffic Control Radar Beacon System (ATCRBS) identification (ID) requests. Test results indicate that the en route DABS/ATC Build I software successfully processed DABS sensor surveillance information. Although analyzed on a limited basis, the transmission of surveillance related communication messages between the DABS sensor and the en route DABS/ATC build I system is considered to operate as expected. It is concluded that the DABS/ATC en route Build I system accepts, processes, tracks, and displays DABS and ATCRBS surveillance data from one DABS and multiple ATCRBS sensors with no degradation to the baseline function of the NAS software system A3d2.4. (Author)

AN (1) AD-A104 150/XAG
FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC AIR TRAFFIC SERVICE

TI (6) Operation Free Flight - An Operational Evaluation of RNAV Direct Route Flight Plan Filing in Today's National Airspace System.

DN (9) Final rept.
AU (10) Minnick,Wayne
RD (11) Jul 1981
PG (12) 87 Pages
RS (14) FAA-AT-81-1
RC (20) Unclassified report
DE (23) *Routing, *Air traffic control systems
Air space, United States, Planning, Flight paths, Arrival, Feasibility studies, Aviation fuels, Savings, Acceptability, Pilots
ID (25) RNAV(Area Navigation), Great circle routes, Direct route flight paths, Free flight operation, Fuel savings
AB (27) This report presents the results of an operational evaluation concerning the feasibility of permitting the filing of direct route flight plans, without route definition, between departure and arrival area fixes serving selected city-pairs. The evaluation was conducted with the voluntary participation of Eastern, United, and Pan American Airlines during the period June 1 through December 31, 1980. Objectives of Operation Free Flight were to obtain factual information about air traffic control (ATC) handling of test aircraft on direct routings, system prohibitions to the concept, general pilot attitude regarding the utility of their RNAV equipment, potential fuel savings, and ATC system impact. The evaluation was conducted throughout the contiguous United States between 27 city-pairs. The primary conclusions were: the operational concept of filing direct, great circle routes between departure and arrival area fixes, at altitudes above Flight Level 290, in a radar environment is feasible; incompatibility with traffic arrival flow at destination airports was determined to be the most significant system prohibition; pilot attitude was skewed in a positive direction; potential fuel savings are projected to be in excess of 40,000,000 gallons per year, and, there was no adverse impact to the ATC system. (Author)

AN (1) AD-A104 151/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Proceedings of the General Aviation Safety Workshop (2nd), January 27-30, 1981.
RD (11) Jul 1981

PG (12) 63 Pages
RS (14) FAA-CT-81/177
RC (20) Unclassified report
DE (23) *Aviation safety
Civil aviation, Flight training, Symposia
AB (27) Contents: First Plenary Session; Speaker Biographies; Second plenary session; Summary of Recommendations; and List of Attendees.

AN (1) AD-A104 563/XAG

FG (2) 010400

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Threat Alert and Collision Avoidance System (TCAS) Symposium.

RD (11) 22 Jul 1981

PG (12) 177 Pages

RS (14) FAA/RD-81/76

RC (20) Unclassified report

DE (23) *Collision avoidance, *Transponders, *Search radar

Air space, Standards, Pilots, International, Secondary, Approach

ID (25) Midair collisions, SSR(Secondary Search Radar)

AB (27) The Federal Aviation Administration held a symposium on Threat Alert and Collision Avoidance System (TCAS) in Washington, D.C., July 22, 1981, which was attended by representatives of 68 organizations and 21 airlines. This report contains the news release announcing the new approach to providing protection against mid-air collisions, 10 presentations and the transcript of the panel discussion. The TCAS will provide a range of capabilities and costs which will meet the requirements of all airspace users. The least complex part of the system is designed for private pilots and would cost about \$2,500. The fully capable, or airline, version would cost between \$45,000 and \$50,000. This new concept represents a new capability which draws on all FAA has learned about collision avoidance in its past efforts, extends and simplifies FAA's efforts to date, provides new capabilities to all users, and is fully compatible with international standards and improvement activities on the Secondary Surveillance Radar (SSR). (Author)

AN (1) AD-A104 758/XAG

FG (2) 040200

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Use of Groundspeed. in a Wind Shear and the Flight Evaluation of a Radar-Altitude-Based System for the Measurement of Groundspeed.

DN (9) Final rept. Jan 78-Oct 80

AU (10) Lawrence,David

RD (11) Jul 1981

PG (12) 44 Pages

RS (14) FAA-CT-81-34

RC (20) Unclassified report

DE (23) *Wind shear, *Radio altimeters, *Radar antennas

Jet transport aircraft, Aircraft antennas, Test and evaluation, Turning flight, Inertial navigation, Jet aircraft, Equilibrium(General), Models, Flight, Tracking, Airspeed, Dynamics, Cables, Standards, Aircraft, Accuracy, Climbing

ID (25) Groundspeed indicators, Flush antennas, Climbing flight, Descending flight

AB (27) The use of groundspeed in combination with airspeed has been considered and shown to be an effective aid in the execution of an approach and landing in a heavy jet transport airplane. A flight dynamics analysis shows that the response of such aircraft to sudden changes in headwind is quite sluggish, requiring more than 100 seconds for equilibrium conditions to be regained in the worst case. A feasibility demonstration model of a radar-altitude-based system for the measurement of groundspeed has been subjected to a limited in-flight evaluation. It is a self-contained unit requiring no ground-based equipment and no on-board equipment other than the small flush transmit and receive antennas and the associated cable runs. While the current unit does not meet the desired accuracy standard (delta = + or - 3 knots, or less), it approaches it at times, and greater accuracy can be achieved with further development. Responsiveness to rapidly changing groundspeed matched that of the reference inertial navigation system; and satisfactory groundspeed tracking was maintained during turning, climbing, and descending flight. (Author)

AN (1) AD-A105 567/XAG

FG (2) 120500

250400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analysis of Discrete Word Recognition.

DN (9) Interim rept. Jan-Mar 80

AU (10) Steelman,Dennis A.
RD (11) Jul 1981
PG (12) 69 Pages
RS (14) FAA-CT-80-59
RN (18) FAA-RD-81-21
RC (20) Unclassified report
DE (23) *Word recognition, *Computer applications
Test and evaluation, Performance tests, Voice communications, Telephone systems, Computer files, Natural language, Weather forecasting, Data transmission systems, Man computer interface, Graphs, Experimental data, Tables(Data)
ID (25) URD(Utterance Recognition Device), LPN-FAA-131-401-835
AB (27) The Federal Aviation Administration Technical Center's Utterance Recognition Device (URD) was tested to determine its recognition rate and other pertinent operating characteristics for a vocabulary of 25 words. Audio input for the test was by means of standard voice grade telephone lines. No specific speaker training of the URD was performed prior to the test. Analysis of the resulting data base indicated that the 219 test subjects achieved an overall recognition rate of 85 percent. Computer simulation of subdividing the possible word choices, according to function-oriented subgroups, resulted in a 5 percent increase in the overall recognition rate. The results of this test will be used as reference for similar, future tests, using an expanded vocabulary to explore the possibility of using a device, such as the URD, as the input medium for direct user filing of flight plans over standard voice grade telephone lines. (Author)

AN (1) AD-A105 702/XAG
FG (2) 130200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SAFETY
TI (6) Summary of Federal Aviation Administration Responses to National Transportation Safety Board Safety Recommendations.
DN (9) Quarterly rept. Apr-Jun 81
AU (10) Livingston,R. E.
Carpenter,C. A.
RD (11) Jul 1981
PG (12) 838 Pages
RS (14) FAA-ASF-81-4
RC (20) Unclassified report
DE (23) *Aviation accidents, *Accident investigations, *Aviation safety
Air transportation, National transportation system, Aviation safety,

Regulations, Failure, Crashes, Reports, Response
ID (25) National Transportation Safety Board
AB (27) This report contains NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'Closed' by the NTSB as a result of acceptable action). Accordingly, the Table of Contents may reflect a number of multiple recommendations (example: A-79-21 through 24), but background material is included only for those recommendations which remain in an 'Open' status. Background information for those recommendations which have been closed is available in FAA Headquarters files. (Author)

AN (1) AD-A106 489/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST
TI (6) The Prevalence of Visual Deficiencies Among 1979 General Aviation Accident Airmen
AU (10) Dille,J. R.
Booze,C. F., Jr
RD (11) Jul 1981
PG (12) 10 Pages
RN (18) FAA-AM-81-14
RC (20) Unclassified report
DE (23) *Aviation accidents, *Eye diseases, *Pilots, *Vision
Standards, Deficiencies, Abnormalities, Color vision, Eye, Lenses, Pathology, Visual acuity, Rates, Tables(Data)
ID (25) Contact lenses
AB (27) Analyses of the accident experience of pilots who were monocular, did not meet (even the liberal) vision standards, had color vision defects and no operational restrictions, or wore contact lenses, have shown higher-than-expected accident experience in previous studies. However, no causal role had been assigned by accident investigators and reexamination of the records failed to show any obvious pattern or relationship between the defects and the accidents. In the present study of 1979 accidents, the relatively small number of pilots with aphakia and artificial lens implants, as well as the total eye pathology population, had significantly higher accident rates, but the monocular pilots did not. Again, no causal role had been ascribed. Some

associations are debatable, but there is no clear recurring problem. There are still unresolved questions about the consistent operational performance of monocular pilots, those who are not fully corrected to 20/20 distant visual acuity bilaterally, airmen with near vision deficiencies only who are not required to wear corrective glasses, those without fusion, and several with appreciable pathology who have 20/20 corrected central visual acuity but about whom we know very little concerning their dynamic, peripheral, depth or accommodative function. (Author)

AN (1) AD-A107 320/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) SIMPLEX 'A' - A Simplified Atmospheric Dispersion Model for Airport Use (Users Guide).

DN (9) Users manual

AU (10) Segal,Howard M.

RD (11) Jul 1981

PG (12) 25 Pages

RS (14) FAA/EE-81-8

RC (20) Unclassified report

DE (23) *Air quality

Airports, Aircraft exhaust, Pollutants, Air pollution, Concentration(Composition), Dispersing, Mathematical models, Computerized simulation

ID (25) *SIMPLEX A model

AB (27) The method, limitations and uses of the SIMPLEX 'A' atmospheric dispersion model are described. The model determines pollutant concentrations from taking-off aircraft and has the flexibility to easily accept parameter changes. It can treat either single or multiple aircraft departures and permits air quality calculations to be made by persons without an extensive computer background. The program is listed and the results of two sample problems are given to illustrate the use of the model. This is a research model with many of its dispersion and turbulence parameters still under investigation. As such it has not been adopted by the FAA for formalized pollution assessments. (Author)

AN (1) AD-A122 795/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Selection of Applicants for the Air Traffic Controller Occupation

AU (10) Rock,Donald B.

Dailey,John T.

Ozur,Herbert

Boone,James O.

Pickrel,Evan W.

RD (11) Jul 1981

PG (12) 167 Pages

RS (14) FAA-AM-82-11

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Aptitude tests

Personnel selection, Jobs, Ratings, Ranking, Reasoning, Requirements

ID (25) Knowledge

AB (27) This report covers personnel research efforts during the past nine years directed toward improving the selection of applicants to work in the Air Traffic Control occupation. The report summarizes the various research efforts and makes specific recommendations for changes in present OPM tests through which applicants qualify for employment consideration in the ATC occupation, and the rating and ranking procedures used to establish a register of eligible applicants for appointment to the occupation. New tests developed for inclusion in a revised ATC test battery include the Multiplex Controller Aptitude Test (MCAT) and an Occupational Knowledge Test (OKT). Both tests are paper-pencil, machine scorable, multiple choice type tests. The MCAT presents simulations of air traffic flow in each item. The applicant must solve air traffic problems or a related cognitive skill problem in completing each item. The OKT measures important aspects of knowledge associated with prior experience that are related to successful performance as an air traffic control specialist. The revised test battery recommended to OPM includes the Multiplex Controller Aptitude Test and the present OPM test, Abstract Reasoning and Letter Sequence. The Occupational Knowledge Test is used for granting additional earned credit in place of the present OPM Rating Guide. This new test battery meets all professional requirements for an effective test including fairness. (Author)

AN (1) AD-A101 347/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Aircraft Research and Technology for Antimisting Kerosene Conference, February 18-19, 1981.

DN (9) Conference proceedings.

RD (11) Jun 1981

PG (12) 260 Pages

RS (14) FAA-CT-81-181

RC (20) Unclassified report

DE (23) *AIRCRAFT, *ANTIFOGGING AGENTS, *SYMPOSIA

KEROSENE, AVIATION SAFETY, FLAMMABILITY, GASES, TURBOFAN ENGINES, ADDITIVES, POLYMERS, CRYOGENICS, DEGRADATION, SIMULATORS

AB (27) Contents: Antimisting Fuel Engineering and Development Program, Wing Spillage Test, Flammability Comparison Test Apparatus, Large-Scale Aircraft Crash Test of Antimisting Fuel, The Use of Antimisting Kerosene in Turbofan Jet Engines, The Development of ICI'S FM-9 Antimisting Aviation Fuel, Cryogenic Blending Polymer Additives in Fuel, Economic Aspects of Conversion to Antimisting Fuels, UK Programme on Safety Fuels, Fundamental Studies of Antimisting Fuels, Degradation and Characterization of Antimisting Kerosene, Antimisting Fuel Test Correlation Analysis, and KS/DC-10 Fuel System Simulator.

AN (1) AD-A102 023/XAG

FG (2) 050100

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) NAS Automation Equipment Operating Cost Estimates, FY 1978-1984

AU (10) Collins, Jerry

RD (11) Jun 1981

PG (12) 92 Pages

RS (14) FAA-APO-81-6

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Cost analysis, *Computer applications, *Management planning and control, *Planning programming budgeting Forecasting, Logistics support, Data processing equipment, Automation, Personnel, Cost estimates, Maintenance

ID (25) National Airspace System

AB (27) This report provides summary information related to the cost of maintenance and support of certain system elements of the National Airspace System. Specific equipments for which support costs were developed include the major automation equipments of the enroute and the terminal air traffic control systems. The reader is reminded that this study effort was initiated prior to the formal establishment of

the Computer Replacement Program and that the equipment under consideration for replacement is only partially matched by the list of equipment addressed in the study. The information developed should prove useful, however, in evaluating equipment common to both sets. The equipments which are the basis for this report cost about \$137 million in support and maintenance during FY 1979. Of this total, about \$112 million (82%) was labor, \$9 million (6%) was material and \$16 million (12%) was services. Of the total \$112,218,000 of FAA labor AIRWAY FACILITIES cost \$78,947,000 (70%), AIR TRAFFIC software support was \$30,027,000 (27%) and other labor was \$3,244,000 (3%). Support of the Enroute equipments cost \$79,647,000 (58%) and Terminal equipments cost \$57,339,000 (42%). (Author)

AN (1) AD-A102 027/XAG

FG (2) 040200

050100

170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Dissemination of Weather Information in the Air Traffic Control System.

DN (9) Final rept. for period ending Nov 80

AU (10) Goff, R. Craig

Willoughby, P. Wayne

Barboza, George

RD (11) Jun 1981

PG (12) 19 Pages

RS (14) FAA-CT-81-44

RN (18) FAA-RD-81-47

RC (20) Unclassified report

DE (23) *Weather communications, *Air traffic control systems

Facilities, Air traffic controllers, Meteorologists, Weather,

Meteorological data, Message processing, Radio broadcasting

ID (25) Dissemination, LPN-FAA-151-413-420

AB (27) This report addresses the present day methods of disseminating weather information in the Air Traffic Control System. The report is based on the information gathered during visits to various air traffic control facilities by a Federal Aviation Administration Technical Center team. The team responsibility was to observe and analyze weather dissemination methodologies and to interview involved personnel. Based on the data gathered and the problems identified, recommendations are made which can be implemented in the near-term (9 to 12 months). These recommendations, if adopted, may require some modification or redirection of current orders defining weather dissemination

procedures. Also included are recommendations for purchase of new, but off-the-shelf, automating equipment which should aid in the timely deliverance of needed weather products to the users. A trip report, noting observed facility-by-facility dissemination problems, is included as appendix A. (Author)

AN (1) AD-A102 163/XAG

FG (2) 010200

250300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Active Beacon Collision Avoidance Logic Evaluation. volume I. Mode C equipped (ATCRBS) Threat Phase.

DN (9) Final rept.

AU (10) Adkins,A.

Billmann,B.

Thomas,J.

Windle,J.

RD (11) Jun 1981

PG (12) 93 Pages

RS (14) FAA-CT-80-51-1

RN (18) FAA-RD-80-125-1

RC (20) Unclassified report

DE (23) *Collision avoidance, *Beacons, *Aviation safety

Warning systems, Flight testing, Vertical orientation, Multiple operation, Horizontal orientation, Performance(Engineering), Separation, Threats, Prototypes, Resolution, Surveillance, Tracking, Functions, Algorithms, Logic, Noise, Maneuvers, Modification, Aircraft, Phase, Rates

ID (25) LPN-FAA-052-241-320

AB (27) The purpose of this project was to evaluate and refine the April 1979 version of the Beacon Collision Avoidance System (BCAS) logic prior to Active BCAS prototype flight testing. The April 1979 version of the BCAS logic added changes to support multiple aircraft resolution, conflict indicator register interfacing, and new surveillance function interfacing. The first phase of the evaluation was conducted from April 1979 to September 1979. This phase evaluated logic performance against mode C equipped (ATCRBS) threats. The evaluation identified modifications which could improve logic performance. Interim improvements have been made to the vertical tracker. The modifications improve command sense choice logic performance for ATCRBS threats (by using greater dependence on current relative vertical position), resolution performance (by modifying ATCRBS-threat sense choice logic),

and vertical speed limit (VSL) alarm performance. Generally, good protection was provided by the BCAS logic against abrupt horizontal maneuvers by ATCRBS threats. VSL alarms generated sufficient vertical separation when the BCAS aircraft's vertical rate was above 1,000 feet per minute. Below 1,000 feet per minute, tracker noise often resulted in a transition from VSL alarms to positive or negative BCAS maneuver advisories. Before proceeding to subsequent phases of the evaluation, large portions of the logic modifications that were identified in this report became permanent algorithm changes. (Author)

AN (1) AD-A102 209/XAG

FG (2) 010600

040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Improved Weather Services for Helicopter Operations in the Gulf of Mexico.

DN (9) Final rept.

AU (10) Hilsenrod,Arthur

RD (11) Jun 1981

PG (12) 84 Pages

RS (14) FAA/RD-81/40

RC (20) Unclassified report

DE (23) *Weather forecasting, *Weather communications, *Meteorological data,

*Civil aviation, *Mexico Gulf

Flight, Helicopters, Flight paths, Offshore, Meteorological phenomena, Observation, Weather stations, Detection, Tracking, Position finding, Terminals, Meteorological satellites, Meteorological instruments, Aviation safety

AB (27) Current weather services in support of the more than 800 helicopters operating in the Gulf of Mexico is reviewed and the limitations noted. Means of improving these services based on currently available facilities and ongoing research and development efforts are presented. Immediate improvements in weather services can be attained by the implementation of a plan agreed upon by personnel of the FAA, NWS and helicopter operators. Near-term (to 1986) and longer-term (beyond 1986) developments in observations, forecasts, and communications that can improve weather services are presented. (Author)

AN (1) AD-A103 351/XAG

FG (2) 250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Crosstalk Levels of Speech Plus Data in Remote Communications Air-Ground (RCAG).

DN (9) Final rept. Aug 79-May 80

AU (10) Rehmann, Albert J.

RD (11) Jun 1981

PG (12) 61 Pages

RS (14) FAA-CT-80-38

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Voice communications, *Digital systems, *Data links, *Crosstalk

Parameters, Standards, Channels, Data transmission systems, Telephone systems, Modems, Remote detectors, Monitoring

ID (25) RCAG(Remote Communications Air Ground), LPN-FAA-219-151-200

AB (27) The Federal Aviation Administration (FAA) is proposing the addition of a digital data channel to the existing telephone lines which connect air route traffic control centers (ARTCC's) with remote communications air-ground (RCAG) sites to economically transfer Remote Monitoring System (RMS) parameters and control data between the ARTCC's and the sites. FAA specification FAA-E-2699a establishes the maximum allowable interference level to pilot/controller communications which would be allowed to result from the addition of the data channel. The tests described in this document were designed to verify that the requirements in FAA-E-2699a are sufficient to prevent disturbance to normal air traffic control (ATC) operations. The tests were performed by simulating an existing communications channel using data modems and samples of present-day Voice Frequency Control System (VFCS) equipment. Crosstalk levels of speech and data were measured under actual operating conditions. The test results indicated that the addition of an RMS data channel to existing FAA telephone lines is technically feasible and that the requirement in FAA-E-2699a concerning the data crosstalk in the audio portion of the communication channel is not adequate to prevent disturbance to normal ATC operations. The requirements concerning data crosstalk in the control portion and VFCS crosstalk in the data portion of the channel are sufficient. (Author)

AN (1) AD-A104 750/XAG

FG (2) 040200
250400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Columbus, Ohio, Voice Response System Demonstration and Evaluation.

DN (9) Final rept. Dec 79-Apr 80

AU (10) Henline, John C.

RD (11) Jun 1981

PG (12) 54 Pages

RS (14) FAA-CT-80-50

RN (18) FAA-RD-81-20

RC (20) Unclassified report

DE (23) *Voice communications, *Telephone equipment, *Weather communications Performance(Engineering), United States, Integrated systems, User needs, Demonstrations, Specialists, Impact, Acceptability, Reduction, Facilities, Stations, Work, Distribution, Ohio, Flight, Collection, Response, Automation, Mass

ID (25) VRS(Voice Response System), FSS(Flight Service Station), PATWAS(Pilots Automatic Telephone Weather Answering Service)

AB (27) The Voice Response System (VRS) was subjected to a 4-month demonstration in the Columbus, Ohio, Flight Service Station (FSS) preflight area. The purpose of the experiment was to test and evaluate the VRS system, user acceptance, and the effects on the specialists/facility workload, and to determine the general impact of VRS on the Columbus (CMH) FSS preflight area. In addition, the test permitted collection of technical performance data which could serve as the framework for an integrated national system for the mass dissemination of weather information. It is concluded that the VRS caused a shift in user demand/preference, reduced FSS briefer workload, reduced demand for basic pilots automatic telephone weather answering service (PATWAS), and was determined to be acceptable to the general aviation user. (Author)

AN (1) AD-A105 687/XAG

FG (2) 010500
120500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC AIRPORTS SERVICE

TI (6) Airfield Capacity Model (Upgraded).

DN (9) Model, simulation

AU (10) Burke, Jack H.

Sypolt, Ronald

RD (11) Jun 1981

PG (12) 1 Page

RN (18) FAA/DF-81/001

RC (20) Unclassified report

NO (21) Supersedes Rept. nos. FAA-RD-77-45 and FAA/DF-77/001, AD-A039 305. Magnetic tape.

AL (22) Available from National Technical Information Service, Springfield, VA 22161 \$540.00. Source tape is in ASCII character set. Character set restricts preparation to 9 track, one-half inch tape only. Identify recording mode by specifying density only. Call NTIS Computer Products if you have any questions. Price includes documentation, AD-A105 688.

DE (23) *Airports

Air traffic control systems, Runways, Computer program documentation, FORTRAN, Computerized simulation

AB (27) FAA Airfield Capacity Model, a computer program designed to quickly calculate the runway capacity of an airport, has recently been upgraded. Several new features have been implemented in the upgraded version. Among these are improved input and output formats for easier usage, the capability to compute runway capacity for up to eleven different percentages of arrivals in a single run (as opposed to a separate run for each percentage), and provisions for calculating the capacity of alternating arrivals to a pair of parallel runways. Several other runway configurations have been added to the model, or improved, as well.... Software Description: The system is written in the FORTRAN programming language for implementation on HARRIS 1682 computer using the CYBER NOS operating system. 410K bytes of core storage are required to operate the model. (Author)

21

AN (1) AD-A105 903/XAG

FG (2) 090100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Electronic Equipment, General Requirements, Specification FAA-G-2100c.

RD (11) 22 Jun 1981

PG (12) 63 Pages

RC (20) Unclassified report

NO (21) Supersedes specifications FAA-G-2100/1b, dated 28 Jun 73;

FAA-G-2100/2a, dated 19 Jun 68; FAA-G-2100/3a, dated 19 Jun 68;

FAA-G-2100/4b, dated 5 Feb 69; and FAA-G-2100/5a, dated 10 Dec 72.

DE (23) *ELECTRONIC EQUIPMENT, *SPECIFICATIONS

GROUND SUPPORT EQUIPMENT, REQUIREMENTS, MATERIALS

AB (27) This specification covers the general requirements for the design and construction of ground electronic equipment. This specification establishes the ambient conditions within which equipment must operate satisfactorily and reliably; the general material, the process for selection and application of parts, and the tests for ground electronic equipment. Requirements applicable to individual equipments shall be as specified in the individual equipment specifications. (Author)

AN (1) AD-A109 844/XAG

FG (2) 120600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Operational Delay Day Forecasts for the 20 Air Route Traffic Control Centers for the Years 1982 through 2011.

DN (9) Final rept.

AU (10) Livingston,W.

RD (11) Jun 1981

PG (12) 24 Pages

RS (14) FAA/RD-81/93

RC (20) Unclassified report

DE (23) *Air control centers, *Digital computers

Air traffic control systems, Air traffic, Growth(General), Forecasting, Data processing equipment, Utilization, Statistical analysis

ID (25) *Air route traffic control centers

AB (27) The effect of forecasts of increased traffic growth at each of the 20 CONUS Air Route Traffic Control Centers has been examined to determine the impact upon processor utilization of the Central Computer Complex at each center. The study assumes continuation of the current operational capabilities and procedures at each center, and is based upon field data collected between June 1980 and January 1981, and the June 1981 forecast of the IFR aircraft handled at the 20 Air Route Traffic Control Centers. Other factors such as channel utilization are not included in this phase of the study. (Author)

AN (1) AD-A124 581/XAG

FG (2) 010305

010600

050400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PLANS

TI (6) Aviation Executive Conference.

DN (9) Summary rept.

RD (11) 30 Jun 1981

PG (12) 48 Pages

RS (14) FAA-APO-81-9

RC (20) Unclassified report

DE (23) *Civil aviation

Symposia, Planning, Regulations, Aeronautical engineering, Airframes, Manufacturing, Aircraft industry, User needs, Information transfer, Airports, Revenue sharing, Air traffic control systems, Labor, Investments, Automation, Aircraft noise, Transport aircraft, Policies, United States Government

ID (25) FAA(Federal Aviation Administration), CAV(Civil Aeronautics Board), Deregulation

AB (27) Partial Contents: Deregulation-How Far Should the FAA Go?; What Should be the FAA's Role in Encouraging and Fostering the Development of aviation and Helping U.S. Airframe Manufacturers be More Competitive with Foreign Manufacturers?; What User/Information Services Should Continue After CAB abolishment?; Major Hub Airports Sharing Revenues with Reliever Airports; Air Traffic Control System of the Future: Labor Intensive Versus Capital Intensive; and Airport/Aircraft Noise Policy.

AN (1) AD-A174 973/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Helicopter Area Air Traffic Control Demonstration Plan.

DN (9) Program plan

AU (10) Vickers, T. K.

Freund, D. J.

RD (11) Jun 1981

PG (12) 24 Pages

RS (14) FAA-RD-81-59

CT (15) DOT-FA79WA-4279

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS

AIR TRAFFIC, AIRCRAFT, CONTROL, LOW ALTITUDE, FIXED WING AIRCRAFT, HELICOPTERS, PLANNING, MOUNTAINS, SEPARATION, AIRBORNE, FUNCTIONS, NAVIGATION, WORKLOAD, TERRAIN, VALIDATION

AB (27) As part of the Helicopter Operations Development Plan, this document outlines a phased study of area navigation applications in the control of low-altitude IFR helicopter operations, with particular emphasis on methods of reducing controller workload in order to make the use of direct random routes feasible. Each of the four phases of the plan embodies analysis, simulation, and validation. The study is evolutionary; Phase 1 starts with the basic functions of generating conflict-free routes, and maintaining positive separation between aircraft in areas outside of radar coverage. Phase 2 introduces terrain problems in mountainous areas. Phase 3 investigates interactions

between fixed and random routes, and between fixed-wing aircraft and helicopters in major terminal areas. Phase (ptions in navigation, communications, and surveillance coverage) in which the airborne separation assurance function will be investigated). A broad outline of the entire plan is presented, with a detailed schedule of the first phase. Keywords: Air traffic control, RNAV).

AN (1) AD-A182 546/XAG

FG (2) 081200

010200

010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Engineering and Development Program Plan: Helicopter Icing Certification Research.

RD (11) Jun 1981

PG (12) 33 Pages

RS (14) FAA-CT-81-180

RN (18) FAA-ED-18-8

RC (20) Unclassified report

NO (21) See also AD-A061 921.

DE (23) *HELICOPTERS, *ICE FORMATION, *ICE PREVENTION

PLANNING, FLIGHT, TEST AND EVALUATION, ATMOSPHERES, REQUIREMENTS, FIXED

WING AIRCRAFT, SIMULATION, AVIATION ACCIDENTS, AVIATION SAFETY, ALL WEATHER AVIATION, METEOROLOGICAL INSTRUMENTS, LOW ALTITUDE, COST EFFECTIVENESS, RESOURCES, TEST METHODS

AB (27) The Federal Aviation Administration (FAA) program discussed in this plan is established to provide an identification of the helicopter icing problem as it is currently known, the methodology, and the resource requirements for conduct of the efforts necessary for resolution of known problem areas. This program plan defines four specific subprograms: (1) Icing Atmospheric Research for helicopters (which may be applicable to other low-altitude, slow-flying, fixed-wing aircraft); (2) Test and Operational Technology necessary to enhance safety during helicopter icing testing and ice protection operations system technology for application to helicopters; (3) the technology such as simulation testing and analytical techniques for development and testing of helicopter for flight in icing conditions; and (4) the development of technology for use by the FAA in its regulatory and advisory documentation efforts to assure safe, timely, and cost effective certification of helicopter ice protection. Results of efforts under this program are intended to be directed primarily to

regulatory authorities of the FAA for implementation as appropriate and necessary.

AN (1) AD-A100 835/XAG

FG (2) 170700

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Worldwide OMEGA and Very Low Frequency (VLF) Transmitter Outages, January to December 1980.

DN (9) Data rept. Jan-Dec 80

AU (10) Rzonca, Lorraine

RD (11) May 1981

PG (12) 24 Pages

RS (14) FAA-CT-81-26

RN (18) FAA-RD-81-29

RC (20) Unclassified report

DE (23) *TRANSMITTERS, *OMEGA NAVIGATION

HYPERBOLIC NAVIGATION, SHUTDOWNS, RADIO NAVIGATION, VERY LOW FREQUENCY,

RELIABILITY, TOWERS, MAINTENANCE, ARGENTINA, STRUCTURES

ID (25) Simultaneous outages, LPN-FAA-043-311-520

AB (27) An investigation of worldwide OMEGA and very low frequency (VLF) transmitter outages during 1980 was conducted with emphasis on simultaneous outages. Data includes frequency and duration of simultaneous outages and total yearly percentage shutdown for each transmitter. Scheduled outages are specifically noted. The most significant dual OMEGA outage lasted 4.9 hours when the Argentina transmitter was shutdown to correct tower structural problems while La Reunion was down for annual maintenance. (Author)

AN (1) AD-A101 473/XAG

FG (2) 010301

170500

230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A Compendium of Aircraft Cockpit Vision Surveys, 1950 through 1980. Volume I

DN (9) Final rept. 1950-1980

AU (10) Barile, Anthony J.

RD (11) May 1981

PG (12) 148 Pages

RS (14) FAA-CT-81-40-VOL-1

RN (18) XH-FAA-CT

RC (20) Unclassified report

AL (22) Approved for public release; distribution unlimited.

DE (23) *COCKPITS, *SURVEYS, *VISIBILITY

MILITARY OPERATIONS, HUMAN FACTORS ENGINEERING, HELICOPTERS, CAMERAS,

HISTORY, CIVIL AVIATION, MAN MACHINE SYSTEMS, AVIATION SAFETY, BINOCULARS, ACCIDENT INVESTIGATIONS

ID (25) BINOCULAR CAMERAS, LPN-FAA-183-340-400

AB (27) This publication contains a history of cockpit of visibility surveys which were conducted to measure and record aircraft (General Aviation, Transport, Helicopter, Military) cockpit visibility. Many of the aircraft were involved in midair collisions, accident investigations, research and development, and the design up through production implementation. The Federal Aviation Administration (FAA) Binocular Camera is a standard means to accurately measure cockpit visibility, which in the certification process for civil aircraft is an invaluable tool for industry and the FAA. Therefore, the information contained in this document is intended to contribute to aviation safety. (Author)

AN (1) AD-A103 316/XAG

FG (2) 010300

060500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Improving the Crashworthiness of General Aviation Aircraft by Crash Injury Investigations

AU (10) Kirkham, William R.

RD (11) May 1981

PG (12) 13 Pages

RN (18) FAA-AM-81-10

RC (20) Unclassified report

DE (23) *Aviation accidents, *Aviation safety, *Crash injuries, *Harnesses, *Aircraft seats

Accident investigations, Crashes, Airworthiness, Installation, Safety belts, Restraint, Supports, Cables, Cockpits, Aircraft, Flight crews, Human factors engineering

ID (25) Crashworthiness, LPN-FAA-AM-B-81-TOX-23

AB (27) An accident investigative research program has correlated injuries to aircraft occupants with the accident severity and structural changes in the crash. Findings brought to the attention of aircraft manufacturers have led to specific aircraft being made more crashworthy. Following

the finding of a failure in a shoulder harness attachment the manufacturer strengthened the attachment brace. The way a shoulder harness was joined to a lapbelt was modified as a followup to failure of the attachment in an accident. Noted fractures of lapbelt and shoulder harness cable tiedowns led to the use of stronger cables and modification of the installation. Other accident findings resulted in a shoulder strap guide being placed on an inertia reel and a side-mounted seat being modified.

AN (1) AD-A104 759/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Index of National Aviation Facilities Experimental Center Technical Reports 1972-1977.

DN (9) Final rept. 1972-1977

AU (10) Farrell, Ruth J.
Boylan, Nancy G.

RD (11) May 1981

PG (12) 201 Pages

RS (14) FAA-CT-81-54

RC (20) Unclassified report

DE (23) *Aeronautics, *Air transportation

Reports, Abstracts, Indexes, Bibliographies, Test facilities, Air traffic controllers

AB (27) This report is an index of all technical reports which were assigned NA numbers and published by NAFEC during the period 1972 through 1977. Entries are arranged by NA number and include titles, authors and full abstracts. Separate sections contain indexes by subject, author, and RD number. (Author)

AN (1) AD-A105 260/XAG

FG (2) 010301

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Flight Evaluation of LORAN-C as a Helicopter Navigation Aid in the Baltimore Canyon Oil Exploration Area.

DN (9) Final rept. Mar-May 79

AU (10) Lynn, William A.

RD (11) May 1981

PG (12) 43 Pages

RS (14) FAA-CT-80-53

RN (18) FAA-RD-81-27

RC (20) Unclassified report

DE (23) *Loran, *Helicopters

Navigational aids, New Jersey, United States Government, Offshore, Aeronautics, Canyons, Navigation, Oils, Accuracy

ID (25) Baltimore Canyon, CH-53A aircraft, LPN-FAA-045-390-130

AB (27) A series of flight tests were conducted to investigate the use of long range navigation (LORAN)-C as a helicopter navigation system in the offshore New Jersey Baltimore Canyon oil exploration area. Tests were flown aboard the Federal Aviation Administration (FAA) Technical Center's CH-53A using a Teledyne Systems TDL-711 LORAN Micro-Navigator. The purpose of the tests was to determine the accuracy and operational usability of LORAN-C for offshore en route navigation and nonprecision approaches. The total system accuracy met or exceeded the requirements of Advisory Circular (AC) 90-45A 'Accuracy Requirements of Area Navigation Systems' for terminal and en route phases of flight, provided the proper LORAN triads were selected. The LORAN-C System did not meet AC 90-45A nonprecision approach accuracy criteria. (Author)

AN (1) AD-A105 365/XAG

**FG (2) 010300
010600**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) An Analysis of Civil Aviation Propeller-to-Person Accidents: 1965-1979

AU (10) Collins, William E.

Mastrullo, Angelo R.

Kirkham, William R.

Taylor, Deborah K.

Grape, Paula M.

RD (11) May 1981

PG (12) 13 Pages

RS (14) FAA-AM-81-15

RC (20) Unclassified report

DE (23) *Civil aviation, *Aviation safety, *Accidents

Rotor blades, Propeller blades, Management information systems, Feasibility studies, Pattern recognition, Aircraft markings, Military training, Ground crews, Passengers, Prevention, Weather, Visibility, Airports

AB (27) The interest of manufacturing, governmental, and safety personnel using paint schemes on propeller and rotor blades is based on improving the visual conspicuity of those blades when they are rotating. While

propeller and rotor paint schemes may serve to reduce the number of fatalities and injuries due to contact with a rotating blade there is little information available regarding analyses of the circumstances surrounding such accidents. Brief reports provided by the National Transportation Safety Board of all 'propeller-to-person' accidents from 1965 through 1979 were examined and analyzed in terms of airport lighting conditions, actions of pilots, actions of passengers and ground crew, phase of flight operation, weather conditions, and others. Analyses based on a total of 319 accidents showed a marked drop in the frequency of 'propeller-to-person' accidents from 1975 through 1978. Several types of educational efforts directed toward pilots and ground crew, both prior to and during that 4-year period, were examined as possible factors contributing to the accident rate decline. Accident patterns provide a basis for assessing the probable efficacy of various recommendations (including propeller conspicuity) for further reducing 'propeller-to-person' accidents. (Author)

AN (1) AD-A105 619/XAG

**FG (2) 050500
131200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) The Effect of the Airline Deregulation Act on the Level of Air Safety. Annual Report of the Secretary of Transportation to the United States Congress Pursuant to Section 107 of the Airline Deregulation Act of 1978 (P.L. 95-504).

RD (11) May 1981

PG (12) 103 Pages

RC (20) Unclassified report

DE (23) *Aviation safety

Air transportation, Passenger aircraft, Regulations, Federal law, Aviation accidents, Statistical analysis

ID (25) Airlines, *Deregulation

AB (27) This report was prepared in response to the requirements of Section 107 of the Airline Deregulation Act of 1978 (P.L. 95-540). It reviews the impact of deregulation on air carrier operations in calendar year 1980, and provides statistical data on accident, incident, and violation records for these carriers. The statistical data from calendar year 1980 show that there was a significant improvement in the overall safety record for all of the air carrier groups as compared to 1979. The domestic trunk carriers, in terms of fatal accidents, achieved a perfect safety record in 1980. The commuter air carriers, while experiencing continuing growth, also showed a marked improvement in safety. The air taxi operators had fewer accidents in 1980 but had more

fatal accidents. The statistical data show that air safety was not adversely affected by deregulation. (Author)

AN (1) AD-A105 688/XAG

**FG (2) 010500
120500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Upgraded FAA Airfield Capacity Model Compiled from the Following Reports: FAA-RD-76-128 and FAA-EM-81-1-VOL-1.

AU (10) Ball, Carl T.

Swedish, William

RD (11) May 1981

PG (12) 240 Pages

RN (18) FAA/DF-81-001A

RC (20) Unclassified report

NO (21) For magnetic tape, see AD-A105 687.

DE (23) *Airports, *Air traffic control systems, *Computerized simulation Runways, Computer program documentation, Fortran, Arrival, Taxiways, Commercial aviation, Air transportation, User needs

AB (27) The FAA Airfield Capacity Model is a computer program which analytically calculates the maximum operational capacity of a runway system under a wide range of conditions. The user has considerable freedom to vary the characteristics of the runway, aircraft, and ATC system. A major effort to upgrade the capacity model has been concluded. Modifications to the program focused on three principal areas: adding new functions and abilities; updating to incorporate the latest ATC procedures; and correcting minor program errors. This report constitutes Volume I of a two-volume set of documentation on the upgraded capacity model. Volume I, the Supplemental User's Guide, includes a brief, non-technical description of the principal changes to the program (Section 2) and a summary of changes to the model input and output (Section 3). In addition, two appendices contain revised versions of the chapters in the original User's Manual (FAA-RD-76-128, Reference 1) which pertain to the Airfield Capacity Model.

AN (1) AD-A106 226/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Factors Related to the Welfare of Animals During Transport by

Commercial Aircraft

AU (10) Hanneman, Gerald D.
RD (11) May 1981
PG (12) 17 Pages
RN (18) FAA-AM-81-11
RC (20) Unclassified report
DE (23) *Animals, *Domestic animals
Transportation, Air transportation, Commercial aircraft, History,
Safety, Health, Regulations, Dogs, Shipping
ID (25) *Animal welfare, LPN-FAA-AM-B-81-VM-1, LPN-FAA-AM-E-80-VM-1
AB (27) This report contains a brief history of the transportation of animals
by air. It describes how various organizations contributed to the safe
and humane care of animals during transport and how regulations to
insure safer shipping conditions were developed by the United States
Department of Agriculture. The two classes of cargo spaces in large
aircraft used to transport small animals are discussed in relation to
fire safety, environmental considerations and the possible health
effects on animals during shipment. Also discussed are problems
encountered in the airport terminal holding area, practical
considerations in shipping dogs, and examples of animal losses.
(Author)

AN (1) AD-A166 475/XAG

FG (2) 010600

050900

120300

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) U.S. Civil Airmen Statistics. 1980.

DN (9) Annual rept.

AU (10) Carter, Patricia Wilson

RD (11) 31 May 1981

PG (12) 44 Pages

RC (20) Unclassified report

DE (23) *MEDICAL EXAMINATION, *STATISTICAL DATA, *CIVIL AVIATION, *PILOTS,
*AERONAUTICS

FLIGHT CREWS, GLIDERS, AIR TRANSPORTATION, REGIONS, STUDENTS,
TABLES(DATA), HEALTH SURVEYS, RATINGS, HELICOPTERS, INDUSTRIES,
OKLAHOMA, URBAN AREAS, COMMERCIAL AVIATION, FLIGHT, INSTRUCTORS,

WOMEN

ID (25) Certification

AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet

the demands of FAA, other government agencies, and industry for more
detailed airmen statistics than those published in other FAA reports.
Statistics pertaining to airmen, both pilot and nonpilot, were obtained
from the official airman certification records maintained at the FAA
Aeronautical Center, Oklahoma City, Oklahoma. Selected Tables include:
Active Pilot Certificates Held: December 31, 1971-1980; Women Actively
Engaged in Aviation; Active Pilots and Nonpilots Certificates Held, by
Class of Certificates, by FAA Region; Active Pilots and Flight
Instructors by FAA region and State; Active Helicopter Pilots by Class
of Certificates; Active Glider Pilots by Class of Certificates; Airline
Transport Certificates Held, by Selected Age Groups; Active Pilot
Certificates Held, by Category and Age Group of Holder; Active Nonpilot
Airmen Certificates Held, by FAA Region and State; Pilot Certificates
Issued, by Category; Student Certificates Issued, by Month.

AN (1) AD-A098 709/XAG

FG (2) 010600

210500

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Engineering and Development Program Plan Propulsion Safety

AU (10) Howard, F.

RD (11) Apr 1981

PG (12) 35 Pages

RS (14) FAA-CT-81-157

RN (18) FAA-ED-18-5A

RC (20) Unclassified report

DE (23) *Aircraft engines, *Gas turbines, *Piston engines, *Helicopter engines,
*Aviation safety

Ingestion(Engines), Water, Damage, Data bases, Civil aviation,
Regulations, Planning

AB (27) Assessment of technology advances relative to existing civil aviation
regulations indicates that near- and far-term research and development
is necessary to resolve potential problems areas and to improve the
data base required for proper rule-making. Milestone schedules and
recommended funding requirements are included for each task. The five
areas of investigation are ingestion, durability, stability, fuels, and
materials. The overall scope of work in safety and reliability involves
investigations and evaluations in three major propulsion program
subdivisions and one propulsion functional systems program area. These
are: aircraft gas turbine engines, aircraft piston engines, helicopter
propulsion systems, and propulsion functional systems and components.
(Author)

AN (1) AD-A099 218/XAG

FG (2) 170100
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Analytical Investigation of Time Correction in Alpha-Beta Tracking
Filters with Application to En Route Tracking.

DN (9) Final rept. Mar 79-Mar 80

AU (10) Lefferts, Robert E.

RD (11) Apr 1981

PG (12) 47 Pages

RS (14) FAA-CT-80-47

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-NA-79-47, AD-A085 606.

DE (23) *Air traffic control systems, *Track while scan, *Radar tracking,
*Digital filters

Time intervals, Performance(Engineering), Asynchronous systems,
Position(Location), Data management, Solutions(General), Steady state,
Data rate, Tracking, Limitations, Maneuverability, Measurement,
Degradation, Filters, Targets, Operation, Time, Accuracy, Constants,
Sources, Corrections

ID (25) ABF(Alpha Beta Filters)

AB (27) In the analysis of the alpha-beta tracking filter, it is normally assumed that the tracking filter and data source operate in synchronism at a constant data rate. An analytical solution is obtained for the case in which the tracking filter and data source operate asynchronously, thus violating the standard assumptions. To compensate for the asynchronous operation of the filter, the technique of time correction is used to adjust the measured data point via the estimated velocity which approximates the synchronous operation of the filter and data source. The tracking filter performance in the steady-state case where time correction is used is better than that obtained from a fixed-parameter tracking filter in which the actual random time intervals between measurements are used as the temporal basis of filter operation. To ensure no degradation in system performance for purposes of air traffic control, a system timing accuracy on the order of 0.05 second is required to preserve the position measurement accuracy rather than the presently used technique which yields a timing accuracy on the order of 0.8 second. If the specified level of timing accuracy is not achieved, then it is postulated that significant errors will be introduced in the predicted position for maneuvering targets. System timing errors are presently the limiting factor in providing accurate

position measurements for en route purposes and will partially nullify the data accuracy which will be available in the future. (Author)

AN (1) AD-A099 326/XAG

FG (2) 120600
120700
170703
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Discrete Address Beacon System (DABS) Computer Performance/Test and
Evaluation.

DN (9) Interim rept. Dec 79-Sep 80

AU (10) Fisher, Donald

Pino, Joseph

Fox, Daniel

RD (11) Apr 1981

PG (12) 58 Pages

RS (14) FAA-CT-81-7

RN (18) FAA-RD-81-12

RC (20) Unclassified report

NO (21) See also AD-A085 585.

DE (23) *Discrete address beacon systems, *Air traffic control systems, *Radar
beacons, *Data links, *Computer applications

Test and evaluation, Test methods, Computer architecture,
Multiprocessors, Computer communications, Memory devices, Bus
conductors, Performance tests, Data acquisition, Data bases

ID (25) Distributed data processing, ATARS(Automatic Traffic Advisory and
Resolution Service), ARTS(Automatic Radar Terminal System),
LPN-FAA-034-241-510

AB (27) This document describes tests conducted on the Discrete Address Beacon System (DABS) engineering model sensor with the release 6.4 software package to measure the performance characteristics of the computer subsystem distributive architecture. Tests were conducted for various aircraft load conditions in three specific areas: system data bus contention, global memory address space utilization, and processor utilization. Both the methods of conducting these tests and the results obtained are described. It was concluded that system data bus contention is not a problem with the distributive architecture used. Release 6.4 of the DABS software uses less than 20,480 words of the available 24,576 global memory address space in 24 of the 29 active processors. This leads to the conclusion that no problem should be experienced in expanding the size of the processor local memories from

8,192 words to 12,288 words. Additionally, an expansion of the local memories to 16,384 words appears feasible with minor software changes. The expansion of local memory will enable each processor to perform more functions. This will reduce the total number of processors required and lead to less complexity and a smaller overall volume for DABS. (Author)

AN (1) AD-A099 525/XAG

FG (2) 090100

170703

250200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Investigation of Wilcox Model 585B Very High Frequency Omnidirectional Radio Range System Part 2.

DN (9) Interim rept. May-June 80

AU (10) Bell, Wayne
Dong, James

RD (11) Apr 1981

PG (12) 14 Pages

RS (14) FAA-CT-80-45-PT-2

RN (18) FAA-RD-80-124-PT-2

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Radio beacons, *Position finding, *Solid state electronics

Test and evaluation, Range(Distance), Modulation, Test methods, Spectrum analyzers, Very high frequency

ID (25) *VOR(Very High Frequency Omnidirectional Radio Range), 585B Wilcox radio range system, LPN-FAA-041-305-830

AB (27) This report establishes a calibration procedure which employs a space modulation chart to adjust percent modulation for the Wilcox 585B very high frequency omnidirectional radio range (VOR) System. This procedure is recommended for solid-state VOR designed systems in which the rotatable goniometer has been replaced by a solid-state unit. Ground and airborne modulation tests were made using a spectrum analyzer for determining percent modulation. Results of these measurements indicated 1.5 percent modulation be added to the normal 30 percent modulation adjustment when made with the detector at counterpoise edge to provide equality between near and far afield modulation measurements.

AN (1) AD-A099 852/XAG

FG (2) 010500

050600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) A Study of Airports - Design, Art and Architecture.

RD (11) Apr 1981

PG (12) 91 Pages

RC (20) Unclassified report

DE (23) *Airports

Architecture, Buildings, Facilities

ID (25) Art

AB (27) The Federal Aviation Administration has published an illustrated reference, 91-page source document with specific experience and observations of various design treatments. This publication is directed to airport managers, operators, architects, interior designers, landscape architects, graphic specialists, and others. The document emphasizes achieving an attractive airport while improving the safety and efficiency for the airport user. Increased productivity can reduce operational problems which often plague airport managers. Numerous examples, careful evaluations, and good design concepts are offered in this publication. It is a source of ideas. It is an effort to raise the awareness level of all interested parties to improve the quality of life, especially in our busy, often stressful airport terminals. (Author)

AN (1) AD-A100 552/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) LORAN-C in Mountainous Areas. Phase I. Vermont Tests.

DN (9) Interim rept. Sep 79-Mar 80

AU (10) Rzonca, Lorraine

RD (11) Apr 1981

PG (12) 22 Pages

RS (14) FAA-CT-81-22

RN (18) FAA-RD-81-24

RC (20) Unclassified report

DE (23) *LORAN, *MOUNTAINS

TEST METHODS, FLIGHT TESTING, UNITED STATES GOVERNMENT, LONG RANGE(TIME), STATISTICS, AUTOMATIC, VERMONT, VALUE, AIRPORTS, SWITCHES, NAVIGATION, RECEIVERS, AERONAUTICS, PRODUCTION, AIRBORNE, MEAN, ACCURACY

ID (25) Carolina Beach, Nantucket, Seneca, LPN-FAA-048-312-520

AB (27) Flight tests were conducted in the State of Vermont to determine the

suitability of long range navigation (LORAN)-C for airborne area navigation (RNAV) operations in mountainous areas. A production receiver, the Teledyne TDL-711, and a ground-based multi-distance measuring equipment (DME) reference system were used to obtain accuracy statistics during en route flights and nonprecision approaches to four airports. The Federal Aviation Administration (FAA) accuracy criteria (Advisory Circular AC 90-45A) were met for both nonprecision approaches and en route flights when the primary triad (Seneca, Caribou, Nantucket) was used and when no automatic triad switches occurred during the flight. The mean value of the LORAN-C grid bias for the primary triad was generally 0.1 nautical miles (nmi) or less at each of the four airports; however, the bias for the alternate triad (Seneca, Nantucket, Carolina Beach) was significant (1.9 nmi north and 0.5 nmi east at Burlington Airport. (Author)

AN (1) AD-A103 143/XAG

FG (2) 050800

060400

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Physiological, Biochemical, and Performance Responses to A 24-Hour Crash Diet.

AU (10) Higgins,E. Arnold

Mertens, Henry W.

McKenzie, Jess M.

Funkhouser, Gordon E.

RD (11) Apr 1981

PG (12) 26 Pages

RS (14) FAA-AM-81-8

RC (20) Unclassified report

DE (23) *Diet, *Starvation, *Performance(Human)

Food deprivation, Obesity, Weight reduction, Performance tests, Perception, Motor reactions, Fatigue(Physiology), Blood pressure, Blood chemistry, Body temperature, Heart rate, Flight simulation, Males, Pilots

ID (25) LPN-FAA-AM-A-80-PSY-85, LPN-FAA-AM-A-80-PHV-123

AB (27) Twelve overweight male subjects were evaluated once on a normal diet and once on a 24-h crash diet and (low calorie liquids only).

Experiments were 1 wk apart. During 2 1/4-h complex performance tests given at the end of the diet period, subjects breathed an O₂/N₂ gas mixture equivalent to 12, 500 ft. There were no significant

physiological and biochemical findings due to diet for heart rate, blood pressure, serum electrolytes, subjective fatigue and urinary excretion of K⁺, epinephrine and norepinephrine. Body temperatures were lower ($p < .05$) for the crash diet than for the normal diet. Serum glucose levels were normal but increased during the normal diet and decreased during the crash diet. Hematocrit increased from pretest to posttest under both conditions but was greater for the crash diet ($p < .05$) than for the normal diet. Urinary excretion of 17-ketogenic steroids was less ($p < .001$) for the sleep period for the crash diet than for the normal diet. Urinary excretion rate of Na⁺ was less ($p < .001$) for the crash diet than for the normal diet. Complex performance showed no significant differences when subjects were tested under low workloads. Several measurements showed enhancement of performance during the crash diet when subjects were being tested under the medium and high workload conditions. (Author)

AN (1) AD-A103 397/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Prevalence of Selected Pathology Among Currently Certified Active Airmen

AU (10) Booze, Charles F., Jr

RD (11) Apr 1981

PG (12) 13 Pages

RS (14) FAA-AM-81-9

RC (20) Unclassified report

DE (23) *Pathology, *Diseases, *Aviation medicine

Air Force personnel, Standards, Hypertension, Control, Drugs, Optical lenses, Statistical data, Data bases, Pilots, Physical fitness, Tables(Data), Eye, Cardiovascular diseases, Abdomen, Vision, Deficiencies

ID (25) *Contact lenses, *Medical certification

AB (27) It has been the policy of the Federal Aviation Administration to medically certify individuals, for a variety of flying privileges, who also have medical deficiency or disease, provided it can be determined that such action does not compromise air safety. During recent years, for example, standards have been relaxed with respect to contact lens use and medication allowed for control of hypertension. This descriptive epidemiologic study presents the point prevalence of pathology among active airmen as of January 1, 1980, by major body system and for other selected pathologies of interest within the major body systems. Data

were obtained from active computer files maintained by the Aeromedical Certification Branch of the Civil Aeromedical Institute in connection with the certification program. Some 350,701 (42%) active airmen require correction for some visual deficiency. Of this total, 20,058 are contact lens wearers. After eye pathology, cardiovascular and abdominal pathology represent the most prevalent medical conditions among active airmen (3.7% and 2.6% respectively). Overall, disease prevalence is greater among currently certified airmen than among previous groups studied. This increase in prevalence is probably a reflection of more liberal standards more than any other single factor. (Author)

AN (1) AD-A104 922/XAG

FG (2) 010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Summary of Federal Aviation Administration Responses to National Transportation Safety Board Safety Recommendations.

DN (9) Quarterly rept. Jan-Mar 81

AU (10) Livingston, R. E.

Carpenter, C. A.

RD (11) Apr 1981

PG (12) 243 Pages

RS (14) FAA-ASF-81-3

RC (20) Unclassified report

DE (23) *Aviation accidents, *Accident investigations, *Aviation safety

Air transportation, Civil aviation, National transportation system, Regulations, Crashes, Reports, Response

ID (25) National Transportation Safety Board

AB (27) This report contains NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'Closed' by the NTSB as a result of acceptable action). Accordingly, the Table of Contents may reflect a number of multiple recommendations (example: A-79-21 through 24), but background material is included only for those recommendations which remain in an 'Open' status. Background information for those recommendations which have been closed is available in FAA Headquarters

files. (Author)

AN (1) AD-A106 225/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Age-Related Differences in complex Monitoring Performance

AU (10) Thackray, Richard I.

Touchstone, R. Mark

RD (11) Apr 1981

PG (12) 16 Pages

RS (14) FAA-AM-81-12

RC (20) Unclassified report

DE (23) *Attention, *Vigilance, *Monitoring

Display systems, Performance(Human), Radar equipment, Air traffic control systems, Radar tracking

ID (25) Age factor, LPN-FAA-AM-C-81-PSY-84

AB (27) The present study examined the effect of age on the ability to sustain attention to a complex monitoring task. The visual display was designed to resemble an air traffic control radar display containing alphanumeric symbols. Subjects in age groups 18-29, 40-50, and 60-70 years were tested over a 2-hour session. Sixteen symbols appeared on the screen at all times, with 10 critical stimuli (a designated change in the alphanumerics) occurring during each half-hour. Performance decrement was significantly related to age, with performance declining earlier in the session in the oldest group of subjects. Recordings of eye movement activity, skin conductance level, and subjective assessments of fatigue, boredom, monotony, and attentiveness generally failed to reveal any clear reasons for the greater performance decrement of older subjects. Possible directions for further research are discussed. (Author)

AN (1) AD-A106 791/XAG

FG (2) 060500

061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Fatigue in Flight Inspection Field Office (FIFO) Flight Crews

AU (10) Melton, C. E.

McKenzie, J. M.

Wicks, S. M.

Saldivar, J. T.
RD (11) Apr 1981
PG (12) 51 Pages
RN (18) FAA-AM-81-13
RC (20) Unclassified report
DE (23) *Fatigue(Physiology), *Stress(Physiology)
Flight crews, Inflight, Inspection, Urine, Sampling, Creatinine, Heart rate, Hormones, Excretion, Steroids, Levarterenol, Epinephrine, Work
ID (25) LPN-FAA-AM-C-80-PHY-121
AB (27) Studies related to FIFO aircrew stress and fatigue were carried out at seven FIFO's in the Continental U.S. Forty-one men served as subjects and all crew positions were presented. Each crewmember was studied during flight activities and during office-based activities. Generally, crews were in travel status during flight inspection activities and away from the office for 5 d. Crewmembers completed fatigue checklists before and after each duty on every workday. Urine specimens were collected that represented the night sleep period and the work period; they were analyzed for 17-ketogenic steroids, epinephrine, and norepinephrine, and values were expressed as weight per hundred milligrams of urinary creatinine. Ambulatory electrocardiograms were recorded for determination of heart rate (HR) during work. The data indicate that office work is distinctly less fatiguing than flight work. This finding is supported by the HR data that indicate a lower workload in the office than in flight. The statement is commonly made by crewmembers that office work is more fatiguing than flight work. It is probable that such statements are based on work preference rather than work level. Some crewmembers at Oklahoma City, Atlanta, Los Angeles, and Battle Creek show severe fatigue associated with flight work.

AN (1) AD-A110 356/XAG
FG (2) 010600
050500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION
SECURITY
TI (6) Effectiveness of the Civil Aviation Security Program.
DN (9) Semi-annual rept. no. 13, 1 Jul-31 Dec 80.
RD (11) 15 Apr 1981
PG (12) 43 Pages
RS (14) FAA-ACS-82-13
RC (20) Unclassified report
NO (21) Report to Congress.

DE (23) *Civil aviation, *Security, *Crimes
Transport aircraft, Bombs, Threats, Sabotage, Crisis management, Strategy, Training, Security personnel, Law enforcement, Threat evaluation, Inspection, Passengers, Detection, Weapons, Explosives detection, Regulations, Aviation safety, Operational effectiveness
ID (25) Hijacking
AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)
SE (34) 13

AN (1) AD-A098 179/XAG
FG (2) 010300
201300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Effect of Thermal Radiation on the Integrity of Pressurized Aircraft Evacuation Slides and Slide Materials
DN (9) Final rept. May 79-Sep 80
AU (10) Brown, Louis J., Jr.
Nicholas, Eldon B.
RD (11) Mar 1981
PG (12) 79 Pages
RS (14) FAA-CT-81-28
RN (18) XH-XD
RC (20) Unclassified report
DE (23) *AIRCRAFT EQUIPMENT, *INFLATABLE STRUCTURES, *AIRCRAFT FIRES, *EVACUATION, *THERMAL RADIATION, *SLIDING
LABORATORY TESTS, SCALE MODELS, ALUMINUM COATINGS, NYLON, FUELS, PRESSURE, RANGE(DISTANCE), HEAT FLUX, NEOPRENE, URETHANES, FIRE SAFETY,
FIRE RESISTANT COATINGS
ID (25) KEVLAR
AB (27) Seventeen full-scale fire tests were conducted to examine the effect of thermal radiation from a large fuel fire on the integrity of pressurized aircraft evacuation slides. Urethane nylon, aluminized urethane nylon, neoprene nylon, aluminized neoprene nylon, and aluminized neoprene Kevlar slides were tested at various distances from a 30- by 30-foot fire pit. Heat flux at the slide, inflation pressure, and air temperature were measured and motion pictures and photographs

were taken during these full-scale tests. At an average heat flux level of 1.5 Btu/sq ft-second (sec) (15 feet from edge of fire pit) inservice evacuation slides failed in a nonseam area in 23 to 32 seconds. With an aluminized coating applied to the airholding surfaces, the time failure increased by more than a factor of two at the same test condition. A laboratory test method, suitable for materials qualification, was developed that exposes an evacuation slide material to a preselected radiant heat flux and pressure. Tests were conducted on new materials submitted by slide and material manufacturers, and material samples taken from the undamaged areas of full-scale test slides. A good correlation was demonstrated between the failure times measured in full- scale and laboratory tests. (Author)

AN (1) AD-A098 480/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Airport Surface Detection Equipment (ASDE)-3 Operational Evaluation.

DN (9) Final rept. 14 Apr-30 May 80

AU (10) Dvorsky,Louis A.
Swezeny,Anthony J.

Hartz,Edwin R.

RD (11) Mar 1981

PG (12) 37 Pages

RS (14) FAA-CT-81-6

RN (18) FAA-RD-81-2

RC (20) Unclassified report

DE (23) *Air traffic control terminal areas, *Radar tracking, *Taxiways
Field tests, Operational effectiveness, Reliability, Area coverage,
Fading(Electromagnetic waves), Masking, Rainfall intensity, Fog, Snow,
Error analysis

ID (25) ASDE(Airport Surface Detection Equipment), ASDE-3 radar

AB (27) Operational tests were performed on the Airport Surface Detection Equipment (ASDE)-3 radar. Three teams of air traffic controllers, two per team, with current field ASDE-2 experience, were used as test subjects. The controllers were from the Eastern and New England Regions. These tests were conducted to determine the extent to which the ASDE-3 met requirements as presented by the Air Traffic Service and what the controllers' opinions were of the radar. Tests conducted were: airport surface coverage, capability, target detection as a function of speed between aircraft and aircraft to obstruction resolution, target size and shape determination, standing target heading, and runway

clearance. (Author)

AN (1) AD-A098 527/XAG

FG (2) 010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Type 1106 Flasher Modification for Remote Operation.

DN (9) Final rept. Jun-Dec 80

AU (10) Jones,Paul H.

RD (11) Mar 1981

PG (12) 15 Pages

RS (14) FAA-CT-81-23

RC (20) Unclassified report

DE (23) *Power supplies

Modification, Flash lamps, Approach lights, Remote systems

ID (25) Type 1106 flashers, LPN-FAA-081-501-810

AB (27) The Federal Aviation Administration (FAA) is presently planning to install an approach lighting system with sequenced flashing lights for category II (ALSF-2) on runway 22R at the McGhee-Tyson Airport, Knoxville, Tennessee. This project was performed in response to an Airway Facilities Services request to determine the feasibility of modifying a flasher unit, FAA 1106, to power a remoted FA-9425/1 flasher optical head to be used there. The modification was completed, and the flash tube photometrics met the required specifications.
(Author)

AN (1) AD-A098 528/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) New Tower Cab Mockup for Philadelphia, Pennsylvania.

DN (9) Final rept. Jun-Oct 80

AU (10) Bottomley,Donald

Ezekiel,Edward G.

Matos,Rene

RD (11) Mar 1981

PG (12) 17 Pages

RS (14) FAA-CT-81-12

RN (18) FAA-RD-80-141

RC (20) Unclassified report

DE (23) *Airport control towers

Pennsylvania, Modification, Models, Consoles

- ID (25) *Tower cab systems, Philadelphia International Airport, Mockups, LPN-FAA-144-170-810
- AB (27) Mockup techniques which used foamcore and plywood were employed by the federal Aviation Administration (FAA) Technical Center to achieve two major goals in assisting the Regional Office and the Air Traffic Control Facility to establish a new control tower at Philadelphia, Pennsylvania. Goal one was to determine the best physical location of present and planned equipment for operational positions and to suggest innovations which would improve their functional capability. Goal two was to design, develop, fabricate, and evaluate the central interior console which is not common to most tower cabs and is not a standard configuration. The result of this effort was a more functional and efficient layout for a standard 525-square-foot Welton-Beckett tower cab. Several new modules were introduced to the peripheral consoles, and a unique central console was designed. A new, innovative technique was created to house the bright radar indicator tower equipment (BRITE) displays on swivel, console-height mounts. (Author)

AN (1) AD-A099 148/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Localizer Range Rate Measurement System

AU (10) Yetter,Forrest

RD (11) Mar 1981

PG (12) 54 Pages

RS (14) FAA-RD-80-92

RC (20) Unclassified report

DE (23) *Position finding, *Doppler effect, *Wind shear, *Range finding, *Doppler navigation

Antenna radiation patterns, Range(Distance), Reaction time, Audio tones, Measurement, Approach, Detectors, Requirements, Patterns, Rates, Processing, Antennas, Accuracy, Demodulation

ID (25) Ranging instruments

AB (27) The FAA Wind Shear Project Office has determined that groundspeed is a desirable parameter for a wind shear detection system. This report describes range rate measurement equipment that meets both the accuracy and response time requirements for groundspeed on final approach. The cost of the described equipment is considerably less than current shelf hardware, e.g., INS and Doppler navigators, that also meet these measurement requirements. The described system provides one-way

differential ranging, operating on the Doppler principal. The localizer carrier antenna pattern is modulated by a 5 KHz precision frequency controlled tone. This signal is received by the aircraft's ILS localizer receiver, and its demodulated tone is processed to measure the Doppler shift of the tone. The unique differential ranging processing method used in this equipment, which accurately measures frequency differences of less than one thousandth of a Hertz, is described in more detail. This system has been successfully flight tested several times, and copies of flight check recordings are shown in this report.

AN (1) AD-A099 196/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) A Systems Engineering Evaluation Method for Piloted Aircraft and Other Man-Operated Vehicles and Machines with Hypothetical Example of a Systems Evaluation and Quantified System Performance-Workload Rating Scales.

DN (9) Final rept.

AU (10) Higgins,Thomas H.

RD (11) Mar 1981

PG (12) 58 Pages

RS (14) FAA-RD-81-30

RC (20) Unclassified report

DE (23) *Pilots, *Job analysis, *Performance(Human), *Systems engineering Ratings, Man machine systems, Data processing, Decision making, Aviation safety, Flight simulation, Logarithm functions, Flight testing

AB (27) A system evaluation method is presented which systematizes and quantifies both PRP pilot rating procedures and ECP engineering calculation procedure measures of system performance on a logarithmic ratio basis of test aircraft configurations compared to a known selected standard aircraft (vehicle) configuration. The logarithmic units $10 \log$ (ECP test/ECP std) and $10 \log$ (PRP test/PRP std) used in this system evaluation method are termed 'decivals dV' as they are 10 times the log base 10 of the ratio of the ECP and PRP values obtained during tests for the test aircraft configuration compared to the chosen standard aircraft configuration. The system evaluation is for chosen time periods of selected flight operations which are critical to flight safety, such as may occur during takeoff, or approach to landing and may include emergency engine failure, flight control or instrument malfunction conditions. System equations are presented which answer the

question as to how good is the test configuration in relation to the known standard configuration during these same flight conditions. Potential ECP measures are discussed and their correlation with PRP pilot ratings obtained during flight test or flight simulator test determines their retention as effective system performance and evaluation measures. The non-dimensional logarithmic nature of the retained ECP system performance descriptors allows their combination by logarithmic summation and their correlation with the PRP pilot ratings is determined. The combination of ECP measures having the highest correlation with pilot ratings is retained for final system evaluation. (Author)

AN (1) AD-A099 220/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test and Evaluation of Remote Area Precision Positioning System (RAPPS). Phase 1.

DN (9) Final rept. Aug 79-Mar 80

AU (10) Naimo, Matthew

RD (11) Mar 1981

PG (12) 25 Pages

RS (14) FAA-CT-80-52

RN (18) FAA-RD-80-102

RC (20) Unclassified report

DE (23) *POSITION FINDING, *AERONAUTICS

LORAN, DISTANCE MEASURING EQUIPMENT, LONG RANGE(DISTANCE), PRECISION, ACCURACY, STANDARD DEVIATION, TRANSPONDERS, FLIGHT TESTING, QUICK REACTION

ID (25) LORAN C, RAPPS(Remote Area Precision Position System)

AB (27) Described is the test and evaluation of an airborne multilateration-distance measuring equipment (DME) position reference system to be used with a long range navigation (LORAN)-C data collection system. The system, Remote Area Precision Position System (RAPPS), was developed by Amex Systems, Incorporated under an Federal Aviation Administration (FAA)/systems Research and Development Service (SRDS) contract. In August 1979, the FAA Technical Center determined system accuracy using a Convair 580 aircraft as a test platform. Space position measurement of the aircraft was determined by the Center Nike-Hercules radar. When the range biases of the four DME ground stations were removed by postflight computation, flight test results from orbits about the Atlantic City DME beacon indicated a standard

deviation error of 256 feet about a mean range error of +345 feet. Operational evaluation of the RAPPS airborne and ground subsystems was conducted during the winter in Vermont. The field evaluation determined that both the ground and airborne subsystems have significant design deficiencies of the hardware/software. (Author)

AN (1) AD-A099 497/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) The AERA Concept.

AU (10) Goldmuntz, Lawrence

Kefaliotis, John T.

Weathers, Delbert

Kleiman, Louis A.

Rucker, Richard A.

RD (11) 24 Mar 1981

PG (12) 174 Pages

RS (14) FAA-EM-81-3

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Computer applications, *Artificial intelligence

Optimization, Energy conservation, Routing, Discrete address beacon systems, Display systems, State of the Art, Decision making, Command and control systems, Automation, Data links, Cost effectiveness

ID (25) *AERA(Automated En-Route Air Traffic Control)

AB (27) An Air Traffic Control (ATC) system can be developed to provide fuel-efficient routings routinely, to increase controller productivity, and to reduce system errors. This concept document describes a system called AERA(Automated En-Route Air Traffic Control), that is an evolutionary extrapolation of many techniques that FAA has pioneered during the past decade, such as conflict alert, en route metering, Automatic Traffic Advisory and Resolution Service (ATARS). Discrete Address Beacon System (DABS), trajectory modeling and planning algorithms, and electronic tabular displays (ETABS). This report was prepared by a team of ATC experts to review prior work and the on-going AERA program, and to define a total AERA concept. The review team concluded that: the concept is feasible; the degree of automation implied can be achieved with state of the art equipment; the system can be designed so that no aircraft would be placed in hazard by system failures; and, finally, AERA has benefits that are substantially larger than its costs.

AN (1) AD-A103 192/XAG

FG (2) 010500

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Methodology in the Assessment of Stress Among Air Traffic Control Specialists (ATCS): Normative Adult Data for the State-Trait Anxiety Inventory from Non-ATCS Populations.

DN (9) Technical rept.

AU (10) Hutto, Gary L.

Smith, Roger C.

Thackray, Richard I.

RD (11) Mar 1981

PG (12) 20 Pages

RS (14) FAA-AM-81-5

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Anxiety, *Stress(Psychology)

Supervisors, Inventory, Scoring, Males, Females, Comparison, Education, Work, Surveys

ID (25) Age factor, LPN-FAA-AM-C-81-PSY-84, LPN-FAA-AM-C-79/80/81-PSY-72

AB (27) STAI scores of adult men and women within the age range of 25 through

59 years were generally equal to or slightly less than scores of the college undergraduate normative group. This suggests that the previous use of undergraduate norms to evaluate A-Trait and A-State scores of ATCSs did not underestimate the levels of work-related stress associated with their work. Smith's* conclusion that there is little evidence to support the notion that ATCSs are engaged in an unusually stressful occupation is not changed by the findings of this study.

Although A-State scores increased from before work to after work in the subsample of FAA employees surveyed in the present study, neither the absolute levels of work stress nor the change in stress induced by work were noticeably different from those levels and changes reported by ATCSs who rated their work shifts as difficult. (*Smith, R.C. 'Stress, Anxiety, and the Air Traffic Control Specialist: Some Conclusions from a Decade of Research'. FAA Office of Aviation Medicine Report no. AM-80-14, 1980).

AN (1) AD-A148 816/XAG

FG (2) 010600

050800

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) DOT/FAA Human Factors Workshop on Aviation (3th). Transcript Held at Cambridge, Massachusetts on 18-19 March 1981.

RD (11) 19 Mar 1981

PG (12) 197 Pages

RS (14) FAA-ASF-81-5

RC (20) Unclassified report

NO (21) See also AD-A107 803.

DE (23) *Aviation safety, *Performance(Human), *Pilots

Behavior, Commercial aviation, Man machine systems, Human factors engineering, Flight instruments, Errors, Fatigue(Physiology), Overload, Air traffic controllers, Workload, Workshops

ID (25) Pilot error

AB (27) This document is a verbatim transcript of the proceedings of the Third DOT/FAA Human Factors Workshop on Aviation held at the Transportation Systems Center in Cambridge, Massachusetts, on March 18-19, 1981. Additional workshops/symposiums are scheduled to address Human Factors safety issues in the coming months. The Fourth Human Factors Workshop on Aviation will be held on May 13-15, 1981. Another workshop is tentatively planned for July, 1981, at the Civil Aeronautical Institute in Oklahoma City, Oklahoma.

AN (1) AD-A365 776/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Automated En-Route Air Traffic Control (AERA) Concept

AU (10) Goldmuntz, Lawrence

Kefalotis, John T.

Kleiman, Louis A.

Rucker, Richard A.

Schuchman, Leonard

RD (11) 24 Mar 1981

PG (12) 176 Pages

RS (14) FAA-EM-81-3

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *ARTIFICIAL INTELLIGENCE

ALGORITHMS, COLLISION AVOIDANCE, DISCRETE ADDRESS BEACON SYSTEMS

AB (27) An Air Traffic Control (ATC) system can be developed to provide fuel efficient routings routinely, to increase controller productivity, and to reduce system errors. The following concept document describes a system called AERA, that is an evolutionary extrapolation of the many techniques that FAA has pioneered during the past decade, such as conflict alert, en route metering, Automatic Traffic Advisory and Resolution Service (ATARS), Discrete Address Beacon System (DABS), trajectory modeling and planning algorithms, and electronic tabular displays (ETABS). This concept document was prepared by a team of ATC experts to review prior work, the ongoing AERA program, and to define a total AERA concept. The review team has concluded that the concept is feasible, the degree of automation implied can be achieved with state of the art equipment, that the system can be designed so that no aircraft would be placed in hazard by system failures, and finally, that AERA has benefits that are substantially larger than its costs.

AN (1) AD-B245 727/XAG

FG (2) 131200
230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SAFETY

TI (6) Human Factors Workshop on Aviation (3rd) Held in Cambridge, Massachusetts on 18-19 March 1981 (Transcript)

RD (11) 19 Mar 1981

PG (12) 194 Pages

RS (14) DOT/FAA/ASF-81-5

RN (18) XH-DOT/FAA/ASF

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *HUMAN FACTORS ENGINEERING

TRANSPORTATION, SYMPOSIA, AERONAUTICS, SAFETY, CIVIL AVIATION, WORKSHOPS, URBAN AREAS, MASSACHUSETTS, OKLAHOMA

DL (33) 12

AN (1) AD-A095 557/XAG

FG (2) 010500
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Terminal Area Forecasts, Fiscal Years 1981-1992

AU (10) Henry, Thomas F.

Hartwill, Janice

Wine, Carlton R.

Mercer, Gene S.

RD (11) Feb 1981

PG (12) 415 Pages

RS (14) FAA-APO-80-10

RC (20) Unclassified report

DE (23) *Airports, *Terminal flight facilities, *Forecasting

United States, United States Government, Statistical data, Airport control towers, Passengers, Tables(Data), Instrument flight, Management planning and control

AB (27) This document presents forecasts of key aviation activity measures for 906 airports including 330 radar approach control facilities through the fiscal year 1992. These forecasts are prepared to meet the planning needs of the Federal Aviation Administration (FAA) offices and services concerned with future traffic levels at these facilities. Except for specific regional requests, the airports selected for inclusion in this publication meet at least one of the following criteria: Existing FAA tower; Candidate for an FAA tower; Currently receiving or forecast to receive certificated route air carrier or scheduled passenger commuter service; or Any general aviation airport that will exceed 60,000 itinerant or 100,000 total operations annually by 1982. The Terminal Area (TAF) report is organized in two sections. The first part is a general summary. It includes summary highlights, the introduction, a brief overview of the forecast methodology, and a series of summary tables. Part Two contains the forecast for each airport. The airport data include summary information for the facility followed by four years of historical data and annual projections for fiscal years (FY) 1981 through 1992. In some cases, a comment about current or planned aviation activity at the airport is included. The summary indicates the airport's tower/nontower status, number of hours the tower is operated daily, and the number of aircraft based at the airport.

AN (1) AD-A096 326/XAG

FG (2) 210400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Wing Spillage Tests Using Antimisting Fuel.

DN (9) Final rept. Mar 79-Nov 80

AU (10) Salmon, Robert F.

RD (11) Feb 1981

PG (12) 54 Pages

RS (14) FAA-CT-81-11
RC (20) Unclassified report
NO (21) Original contains color plates: All DTIC and NTIS reproductions will be in black and white.
DE (23) *Jet engine fuels, *Fuel additives, *Flame inhibitors, *Flammability, *Mist
Fire resistance, Spilling, Aircraft fires, Crashes, Aviation safety, Temperature, Concentration(Chemistry), Ingestion(Engines), Deceleration
ID (25) Antimisting fuels, FM-9 fuel, LPN-FAA-181-520-100
AB (27) Fuel spillage tests were conducted to evaluate the performance of an antimisting fuel (FM-9 with glycol/amine carrier fluid) in a simulated crash environment. The results of the tests are: (1) FM-9 when compared with neat Jet A afforded flammability protection even under test conditions which resulted in a 'fail' for the FM-9; (2) 0.3% 80 F FM-9 provided excellent fire resistance at air-shearing velocities up to 125 knots; (3) spillage rates from 20 to 60 gallons per second yielded similar results; (4) fuel temperature impacted the antimisting performance of the fuel, 47 fuel and 110 F fuel provided fire resistance at air-shearing velocities of 133 and 116 knots, respectively; (5) additive concentration affected fire resistance performance with 0.2 percent and 0.35 percent providing protection at air-shearing velocities of 99 knots and 142 knots, respectively; (6) MK40 rockets used as an ignition source did not alter the basic fire resistance properties of the fuel; (7) the height above the ground of the fuel release point did not affect the test results; (8) the discharge orifice shape did not affect the tests results; (9) engine fuel ingestion tests indicated that fuel quantity ingested was the governing factor as to whether engine surge occurs; (10) deceleration tests indicated that the safety range of FM-9 is about 30 knots higher in deceleration tests versus steady-state spillage tests. (Author)

AN (1) AD-A096 346/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Braking Performance of a United States Air Force Four-Groove 49 X 17 Aircraft Tire With and Without Sipes.
DN (9) Final rept. Jul-Oct 1979
AU (10) Daiutolo, Hector
Grisel, Charles R.
RD (11) Feb 1981
PG (12) 36 Pages
RS (14) FAA-CT-81-1

RN (18) FAA-RD-80-136
RC (20) Unclassified report
DE (23) *Aircraft tires
Grooving, Braking, Performance(Engineering), Friction, Velocity, Hydroplaning, Test facilities, Tracks
ID (25) Sipes, LPN-FAA-082-531-500
AB (27) Braking tests were conducted to determine if large aircraft tires with laterally-cut sipes in the tread improve the braking performance on a wet surface. A tire with 1/4-inch deep by 3/16-inch spaced sipes showed improved braking performance over the nonsiped tire when tested on a wet surface. The improvement, however, becomes insignificant when the depth of the sipes is reduced to 1/8-inch, and there is no improvement when standing water is present regardless of the sipe depth. (Author)

AN (1) AD-A097 566/XAG
FG (2) 010300
040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Groundspeed/Airspeed Differences as a Wind Shear Indicator and Flight Evaluation of a DME-Derived System to Determine Groundspeed.
DN (9) Final rept. Feb 78-Feb 80
AU (10) Lawrence, David M.
RD (11) Feb 1981
PG (12) 64 Pages
RS (14) FAA-CT-80-29
RN (18) FAA-RD-81-1
RC (20) Unclassified report
DE (23) *Ground speed indicators
Aircraft equipment, Avionics, Radio ranges, Very high frequency, Distance measuring equipment, Ground speed, Airspeed, Measurement, Wind shear
ID (25) LPN-FAA-154-451-180
AB (27) The use of groundspeed in conjunction with airspeed as a wind shear indicator is discussed. It is shown that a satisfactory indication of headwind can be obtained using indicated airspeed and a low-cost groundspeed measurement device. This report describes the flight test and evaluation of a distance measuring equipment (DME) range-rate derived system for measuring airplane groundspeed. The system consists of a specially developed airborne unit operating in conjunction with unmodified very high frequency omnidirectional radio range (VOR)/DME ground stations. Operating at ranges up to 50 nautical miles in level flight directly toward or away from the ground station, the root mean

square (RMS) groundspeed error is 3 to 5 knots. In landing approaches or climbout, the RMS error is 4 to 8 knots. (Author)

AN (1) AD-A097 567/XAG

FG (2) 040200
170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of the Transcribed Weather Broadcast (TWEB) System and Alternatives. Volume II. Cost Analyses of the TWEB Radio and Telephone Accessible Mass Weather Dissemination Services.

DN (9) Final rept., Mar 78-Aug 79

AU (10) Barab, John D.

RD (11) Feb 1981

PG (12) 97 Pages

RS (14) FAA-CT-80-6-2

RN (18) FAA-RD-80-63-2

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A089 054.

DE (23) *Weather communications

Air traffic control systems, Information systems, Radio broadcasting, Telephone systems, Cost analysis

ID (25) *TWEB(Transcribed Weather Broadcast), LPN-FAA-131-140-840

AB (27) In Volume II, a comprehensive, in-depth account is afforded for each facet of the cost analyses. Explanations are furnished as to methodologies of approach followed, procedures used, and criteria adhered to in the collection, reduction, and analyses of data pertinent to the component categories of costs applicable to each service. In each instance, the individual analyses were based on the respective equipment configurations of the services as they existed in the contiguous United States at the close of calendar year 1978. The narrative aspects of the cost analyses are augmented by tabular data which reflect the estimated costs incurred for each cost component on a region-by-region basis. Overall, the total estimated calendar year 1978 national aggregate cost for the TWEB radio service and telephone accessible mass weather dissemination services was determined to be approximately \$4.8 million.

AN (1) AD-A097 568/XAG

FG (2) 010500
120500
120600

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) A Microcomputer-Based Signal Data Converter for Runway Visual Range Measurements.

DN (9) Final rept. Oct 79-Apr 80

AU (10) Wainland, David M.

Horton, Glenn J.

Meeks, Howard J.

RD (11) Feb 1981

PG (12) 42 Pages

RS (14) FAA-CT-80-43

RC (20) Unclassified report

DE (23) *Aviation safety, *Microcomputers, *Runways, *Visual perception, *Transmissometers

Data storage systems, Cassettes, Display systems, Remote systems, Airports, Signal processing, Data transmission systems, Specifications, Flow charting, Computer programming, Integrated circuits, Data acquisition, Man computer interface, Microprocessors

ID (25) RVR(Runway Visual Range), Z80 microprocessors, SDC(Signal Data Converter), CCD(Consolidated Cab Display), LPN-FAA-219-151-200

AB (27) A laboratory model microcomputer-based Runway Visual Range (RVR) System was designed and built at the Federal Aviation Administration (FAA) Technical Center. The system includes a Microcomputer Signal Data Converter (SDC), a Remote Display, a local maintenance terminal, a cassette storage unit, a Transmissivity Display, and a Transmissometer Simulator. The Microcomputer SDC computes RVR values for up to 12 transmissometers; previous SDC designs can calculate RVR values for only 1 transmissometer. Furthermore, the microcomputer-based RVR System provides alarm checking, data storage, and RS-232 compatible data outputs that are not available in other RVR systems. Based on the improved capabilities and the microcomputer's low cost, it is concluded that Microcomputer SDC's would be cost effective at airports using more than three transmissometers. (Author)

AN (1) AD-A097 569/XAG

FG (2) 090100
170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Summary of Transponder Data, May 1979 through November 1979.

DN (9) Data rept.

AU (10) Greenberg, Max

RD (11) Feb 1981

PG (12) 29 Pages
RS (14) FAA-CT-81-5
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Transponders, *Radio beacons
Civil aviation, Aviation safety, Radar tracking, Analyzers, Control systems, Data displays, Microprocessors, Data acquisition, Experimental data
ID (25) General aviation, AN/UPX-14, LPN-FAA-031-241-830
AB (27) The purpose of this effort was to determine the performance characteristics of air traffic control radar beacon transponders in an operational environment in general aviation aircraft. A transponder performance analyzer (TPA) was developed at the Federal Aviation Administration Technical Center to measure performance parameters of transponders installed in aircraft. The TPA was installed in a bus for mobility and simulates an air traffic control beacon interrogator (ATCBI) to facilitate measurement of 15 transponder parameters in approximately 30 seconds. A standard gain horn antenna is utilized to couple the signals between the TPA bus and the aircraft. Transponder data were collected at six different geographic locations resulting in more than 690 samples of general aviation transponders. Results show that 42 percent of the transponders met all measured parameters. This is a slight improvement over the 1977/1978 data and is attributed to inclusion of data collected at general aviation airports in the Atlanta area. It is recommended that a study be conducted to determine the effects of transponder performance on the air traffic control systems (Automated Radar Terminal System (ARTS) and National Airspace System (NAS)) by individually varying each of the 15 parameters outside of their specification limits. (Author)

AN (1) AD-A097 756/XAG
FG (2) 170703
250300
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Visual Confirmation of Voice Takeoff Clearance (VICON) Operational Evaluation. Volume I.
DN (9) Final rept. Sep 77-Oct 80
AU (10) Maurer, John J.
Castle, B.
Dowe, E.
Hughes, B.
Nelson, R.
RD (11) Feb 1981

PG (12) 369 Pages
RS (14) FAA-CT-80-60-1
RN (18) FAA-RD-80-114-1
RC (20) Unclassified report
NO (21) Original contains color plates: All DTIC and NTIS reproductions will be in black and white.
DE (23) *Air traffic control systems, *Takeoff, *Signal lights
Clearances, Visual signals, Aviation safety, Remote control, Control panels, Runways, Taxiways, International airports, Lenses, Green(Color), Glare, Test and evaluation, Acceptability
ID (25) VICON(Visual Confirmation), PAR-56 lamps
AB (27) An operational evaluation was conducted at Bradley International Airport, Windsor Locks, Connecticut, to test and experimental visual (light) system which would confirm the voice takeoff clearance issued by the controller. The effort was in response to the tragic incident which occurred in March of 1977 on Tenerife Island where two Boeing 747's collided because of an apparent misunderstanding of air traffic control verbal instructions. This experimental system called Visual Confirmation of Voice Takeoff Clearance (VICON) consisted of a cluster of three PAR56 lamps with green lenses which were installed at all departure points on the airport with the activation of each cluster controlled by the air traffic controller. Results indicated that the VICON system equipment and components operated in a highly reliable fashion during the entire evaluation period. Data collected and analyzed by a contractor indicated that VICON was technically feasible; however, VICON did not demonstrate that it enhanced safety. (Author)

AN (1) AD-A098 093/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Visual Confirmation of Voice Takeoff Clearance (VICON) Operational Evaluation. Volume II. Operations and Maintenance Manual.
DN (9) Final rept. Sep 77-Mar 80
AU (10) Maurer, John J.
Castle, B.
Novakoff, A. K.
Nelson, R.
Roditi, S.
RD (11) Feb 1981
PG (12) 284 Pages
RS (14) FAA-CT-80-60-2
RN (18) FAA-RD-80-114-2

RC (20) Unclassified report
NO (21) See also Volume 1, AD-A097 756.
DE (23) *Signal lights, *Air traffic control systems
Maintenance, Instruction manuals, Test and evaluation, Parts, Schematic diagrams, Wiring diagrams, Takeoff
ID (25) Trouble shooting, VICON(Visual Confirmation of Voice Takeoff Clearance)
AB (27) This document is Volume II of the Visual Confirmation of Voice Takeoff Clearance (VICON) Operational Evaluation. It contains working drawings and schematic diagrams, technical details, and maintenance and detailed operational procedures for the VICON system that was installed at Bradley International Airport, Windsor Locks, Connecticut. The drawings, instructions, and charts in this volume are reproduced exactly as they were used by the Bradley maintenance and air traffic control specialists; no effort was made to formalize or improve the appearance of this information. This volume, therefore, would be utilized if one is interested in considering future implementation or design modification of the VICON system. Seven appendices were added in order to consolidate under one cover the various operational, maintenance, and design details for the VICON system and its components.

AN (1) AD-A098 178/XAG
FG (2) 010200
010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) High Speed Exit Taxiways.
DN (9) Final rept.
RD (11) Feb 1981
PG (12) 48 Pages
RS (14) FAA-RD-81-16
RC (20) Unclassified report
DE (23) *Taxiways
Runways, Exits, Transport aircraft, Maneuvers, Ground level, High velocity
AB (27) The 'high speed' runway exit, also known as angled exit, is an airport/airside design feature which can make an important contribution to increasing capacity of the national air transportation system. The present standard angle exit offers a safe and clear reduction in landing time on the runway. However, except in a very few instances, this potential is not realized. Low utilization of high speed exits, although not conclusively shown, appears to be the results of

operational use only where and when need exists to expedite runway clearance. Underutilization also appears to be motivated by desire to avoid any unnecessary risk or passenger discomfort. Realization of the capacity improvement potential of high speed exits is controlled by the character of the approach control system and the operating procedures currently used by pilots and controllers. Both the average and scatter of current interarrival intervals are sufficiently large to prevent any further benefits from reduced runway time. (Author)

AN (1) AD-A103 190/XAG
FG (2) 010500
060400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE
TI (6) Effect of Different Runway Size on Pilot Performance during Simulated Night Landing Approaches.
DN (9) Technical rept.
AU (10) Mertens, Henry W.
Lewis, Mark F.
RD (11) Feb 1981
PG (12) 20 Pages
RS (14) FAA-AM-81-6
RC (20) Unclassified report
DE (23) *Visual perception, *Illusions, *Night landings, *Runways
Pilots, Performance tests, Computerized simulation, Flight simulation, Display systems, Landing fields, Sizes(Dimensions), Cueing, Approach lights, Approach, Angles, Performance(Human), Man machine systems
ID (25) LPN-FAA-AM-D-79-PSY-67, LPN-FAA-AM-A-80/81-PSY-85
AB (27) In Experiment I, three pilots flew simulated approaches and landings in a fixed-base simulator with a computer-generated-image visual display. Practice approaches were flown with an 8,000-ft-long runway that was either 75, 150, or 300 ft wide; test approaches were to runways with widths of 75, 100, 150, 200, and 300 ft. In Experiment II, 40 pilots controlled the slant of a moving model runway during simulated night visual approaches. Five different models simulated runways from 100 to 300 ft wide and 3,000 to 9,000 ft long. As predicted, training on a wide runway in Experiment I lowered approach angle in approaches to narrower runways; a narrow practice runway also raised approach angles to wider runways. The magnitude of these practice effects increased as distance from runway threshold decreased. There was also a general tendency for approach angles to decrease as runway width decreased. The latter effect was corroborated in Experiment II; in addition, generated

approach angles decreased with increasing runway length. Giving half the pilots information about runway size prior to each approach had no effect on responses. These findings add to the quantitative evidence of danger in night visual approaches due to visual illusions and large variability in the visual perception of approach angle.

AN (1) AD-A103 191/XAG

FG (2) 010300

130100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Emergency Cabin Lighting Installations: An Analysis of Ceiling-versus Lower Cabin-Mounted Lighting during Evacuation Trials.

DN (9) Technical rept.

AU (10) Chesterfield, Burton P.

Rasmussen, Paul G.

Dillon, Robert D.

RD (11) Feb 1981

PG (12) 46 Pages

RS (14) FAA-AM-81-7

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *LIGHTING EQUIPMENT, *EVACUATION AIRCRAFT CABINS, SMOKE, VISIBILITY, EXITS, CEILING, EMERGENCIES, TEST AND EVALUATION, QUESTIONNAIRES

ID (25) LPN-FAA-AM-B-78/79/80-PRS-38

AB (27) Six series of human subject evacuation tests were conducted to compare the evacuation rates with two different emergency lighting systems in an aircraft cabin filled with nontoxic white smoke. Cabin emergency lighting and exit signs mounted near the ceiling were almost completely obscured by smoke, which layered most heavily in the upper one-half of the cabin. A comparison lighting system mounted below layered smoke in aisle seat armrests, with exit signs mounted at and below the cabin midpoint, provided light directly in the aisle and cross aisle. Results indicated that lights and signs mounted lower in the cabin were more readily visible in smoke and enabled subjects to evacuate from a smoke-filled cabin more rapidly than conventional ceiling-mounted lights and signs. (Author)

AN (1) AD-A106 379/XAG

FG (2) 060500

061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Cardiorespiratory Assessment of 24-Hour Crash-Diet Effects on Altitude, +Gz, and Fatigue Tolerances

AU (10) Lategola, Michael T.

Lyne, Peggy J.

Burr, Mary J.

RD (11) Feb 1981

PG (12) 23 Pages

RN (18) FAA-AM-81-2

RC (20) Unclassified report

DE (23) *Fatigue(Physiology), *Acceleration tolerance, *Tolerances(Physiology), *Diet

Altitude, Males, Pilots, Cardiovascular system, Respiratory system, Blood chemistry, Water, Losses, Body fluids

ID (25) LPN-AM-A-81-PHY-122, LPN-AM-A-80-PHY-122

AB (27) Eleven male surrogates of general aviation pilots, 25-40 years old, were tested for altitude, +Gz, and fatigue tolerances with and without previous fasting for 24 h. Testing included 2 min of lower body negative pressure (LBNP) at -40 torr (equivalent to +2Gz) after 118 min at 3,810 m chamber altitude and, after returning to ground level pressure, ergometry of 50 watts (W) for 6 min. The fast had no statistically significant effect on altitude and fatigue tolerances. One subject, who tolerated 2 min of LBNP in the nonfasting condition, lost useful consciousness during this test in the fasting condition. Although the remaining 10 subjects tolerated 2 min of LBNP in both fasting and nonfasting conditions without statistically significant differences in quantitated parameters, 2 of them during fasting manifested symptoms usually associated with impending syncope. Pilots should be informed that a 24-h fast may reduce the margin for safe tolerance of > or = +2Gz flight maneuvers. (Author)

AN (1) AD-A095 056/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) The Braking Performance of an Aircraft Tire on Grooved Portland Cement Concrete Surfaces.

DN (9) Interim rept. Oct 77-Jul 79

AU (10) Agrawal, Satish K.

Daiutolo, Hector

RD (11) Jan 1981

PG (12) 44 Pages

RS (14) FAA-CT-80-35
RN (18) FAA-RD-80-78
RC (20) Unclassified report
DE (23) *Runways, *Grooving
Surfaces, Pavements, Concrete, Aircraft landings, Braking,
Performance(Engineering), Field tests
ID (25) Hydroplaning, Reflexive percussive grooving, LPN-FAA-082-431-500
AB (27) Introduction of transverse grooves on runways improves braking and
cornering performance of aircraft during operations in wet weather
conditions and helps to alleviate hydroplaning. The Federal Aviation
Administration (FAA) has recommended 1/4-inch square grooves spaced at
1-1/4 inches for installation on runways where the potential of
hydroplaning exists. However, a large number of runways remain
nongrooved. The major reasons are the high cost of groove installation
and limited evidence as to the effectiveness of the grooved surfaces at
the touchdown speeds of modern aircraft. The findings of the research
described in this report indicate that by increasing the spacing of the
conventional saw-cut grooves (in the portland cement concrete surfaces)
up to 3 inches, groove installation cost can be reduced by up to 25
percent compared to the installation cost of grooves spaced at 1-1/4
inches. The results further show that the friction levels available on
these grooves under wet operating conditions are not significantly
below those attained on grooves spaced at 1-1/4 inches. These results
are valid for operating speeds of up to 150 knots. The results also
show that a reflex-percussive cutting process is an alternative groove
installation technique that produces V-grooves which provide braking
performance comparable to that of conventional saw-cut grooves. The
installation cost of these alternative grooves can be substantially
less than that of saw-cut grooves. (Author)

AN (1) AD-A095 076/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Math Model Study, Runway 16R Instrument Landing System Localizer at Seattle-Tacoma Airport, Washington.
DN (9) Data rept. for period ending Aug 80
AU (10) Jones, Jesse D.
RD (11) Jan 1981
PG (12) 25 Pages
RS (14) FAA-CT-80-61
RC (20) Unclassified report
DE (23) *Instrument landings, *Runways

Mathematical models, Simulation, Computer programming, Parabolic
antennas, Ground support equipment, Antenna radiation patterns, Graphs
ID (25) Localizers, LPN-FAA-071-713-840
AB (27) Results of a math model study for the runway 16R instrument landing
system (ILS) localizer at the Seattle-Tacoma Airport, Washington, are
presented. This study was performed at the request of the Northwest
Region of the Federal Aviation Administration (FAA) to determine the
effects to the course structure of a proposed building and the
replacement of the existing ILS localizer system. Resultant course
structure plots are presented for both the existing Texas Instruments
Basic Parabolic Category II Localizer and the proposed Wilcox 14/6
Category III Localizer, with and without the effects of the proposed
Boeing building. The course structure plots are the output from the
ILSLOC mathematical model computer program developed by the
Transportation Systems Center and run on the Honeywell 66/60 computer
at the FAA Technical Center. (Author)

AN (1) AD-A095 449/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Flight Tests of the Microwave Landing System Multimode Digital Processor.
DN (9) Final rept. Aug-Nov 80
AU (10) Warren, John
RD (11) Jan 1981
PG (12) 75 Pages
RS (14) FAA-CT-80-19
RC (20) Unclassified report
DE (23) *Microwave landing systems, *Processing equipment, *Digital systems
Glide slope, Multipath transmission, Specular reflection, Time
standards, Flight testing, Performance(Engineering), Beams(Radiation),
Environments, Processing, Antennas, Aircraft, Standards, Azimuth,
Scanning, Regions, Orbits, Noise, Width
ID (25) LPN-FAA-075-725-420
AB (27) Flight tests were performed in order to evaluate four digital airborne
processing techniques. Four techniques used for processing Microwave
Landing System (MLS) time reference scanning beam (TRSB) signals are:
(1) dwell-gate processing (DGP), (2) single-edge processing (SEP), (3)
dual-edge processing (DEP), and (4) splitgate processing (SPGT). These
techniques were flight tested under standard partial orbits, glide
slopes, and aircraft shadowing. Overall, the SPGT and DGP techniques
resulted in about the same errors. The SEP data were noisier than the

DGP but usually had about the same bias. The DEP technique was always inferior to the DGP. Aircraft shadowing errors were excessive for all techniques and should be avoided by operating procedures when an aircraft nears the touchdown region. It is recommended that the DEP algorithm be changed for improved noise performance and flight tests be performed using all four processing techniques in a specular multipath environment and under conditions using two azimuth antennas having different beam widths (these tests were not performed because of equipment nonavailability during flight testing). (Author)

AN (1) AD-A096 293/XAG

**FG (2) 010500
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) SRDS Technical Program Document. Fiscal Year 1981. Research & Development Approved Projects.

RD (11) Jan 1981

PG (12) 121 Pages

RS (14) FAA/RD-81-3

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic control systems, *Navigational aids
Aircraft landings, Landing aids, Aviation safety, Commercial aviation, Reports, Navigation, Beacons, Automation, Airports, Weather, Radar

AB (27) This Technical Program Document (TPD) contains Research and Technology sheets which reflect Systems Research and Development Service, Federal Aviation Administration, approved projects which have significant activity occurring in Fiscal Year 1981 and beyond. These sheets contain the requirement, participating organizations, specific objectives, and milestones scheduled for accomplishment. The dates identified are in effect as of the report date (1/06/81) and are subject to change. This TPD is structured according to the following Engineering and Development Programs: Radar, Beacon, Navigation, Airborne Separation Assurance, Communications, Approach and Landing Systems, Airport/Airside, Airport/Landside, En Route Control, Flight Service Station, Terminal/Tower Control, Weather, Aircraft Safety and Support. (Author)

AN (1) AD-A098 916/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Aviation Medicine Translations: Annotated Bibliography of Recently Translated Material. X

AU (10) Simpson, Lena P.

Goulden, D. R.

RD (11) Jan 1981

PG (12) 43 Pages

RS (14) FAA-AM-81-4

RC (20) Unclassified report

NO (21) See also report dated Apr 76, AD-A031 492.

DE (23) *Aviation medicine, *Bibliographies, *Translations
Work, Alcoholism, Sickle cell anemia, Sleep, Pelvis, Females, Lenses, Air traffic controllers, Pilots, Aircraft landings, Performance(Human), Motor reactions, Reaction time, Attitudes(Psychology)

ID (25) Contact lenses

AB (27) An annotated bibliography of translations of foreign-language articles is presented. Of the 86 listed entries, 53 are concerned with studies of shift work, and 10 are concerned with studies of alcohol. The remaining entries can be subsumed under the following descriptions: sickle cell anemia, exogenous and endogenous components of sleep and wakefulness, use of barbituric acid in photometric determination, high-speed magnified cardiography, data on age characteristics of the female pelvis, tolerance of contact lenses by commercial flight crews, accidents and sickness in coal mines, attitudes toward work and working conditions among air traffic control personnel, pilot landing performance and amount of visual information, use of human bones and hair in forensic identification, motor reaction time to acoustic stimuli, anthropological methods, cupulo-endolymphatic reactions to head turning under natural conditions and in rotation, and expert testimony in aircraft accident investigation. Procedures for obtaining copies of the translations are included. (Author)

SE (34) 10

AN (1) AD-A099 585/XAG

**FG (2) 010600
131200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Summary of Federal Aviation Administration Responses to National Transportation Safety Board Safety Recommendations.

DN (9) Quarterly rept. Oct-Dec 80
AU (10) Harrison, J. R.
RD (11) Jan 1981
PG (12) 263 Pages
RS (14) FAA-ASF-81-2
RC (20) Unclassified report
DE (23) *Aviation accidents, *Accident investigations
Aviation safety, Air transportation, Civil aviation, Aircraft fires
ID (25) National Transportation Safety Board
AB (27) This report contains NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e, those that have not been designated as 'Closed' by the NTSB as a result of acceptable action).

AN (1) AD-A104 894/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Commuter Air Carrier Symposium (2nd) January 15-16, 1981 .
RD (11) 16 Jan 1981
PG (12) 248 Pages
RS (14) FAA-ASF-300-81-6
RC (20) Unclassified report
NO (21) See also AD-A085 628.
DE (23) *Commercial aviation, *Symposia
Aviation safety, Passenger aircraft, Flight simulation, Air transportation, Air traffic, Airports, Human factors engineering
ID (25) *Commuter air carriers
AB (27) Partial Contents: Working Session I -- Simulation, Fitness, and Safety Analysis; Working Session II -- Airports and Airways; and Working Session III -- Human Factors.

AN (1) AD-A106 227/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 through 1980

AU (10) DILLE, J. Robert
Haraway, Annabelle
RD (11) Jan 1981
PG (12) 78 Pages
RS (14) FAA-AM-81-1
RC (20) Unclassified report
NO (21) See also AD-A067 983.
DE (23) *Indexes, *Aviation medicine, *Reports
Medical research
AB (27) An index to Office of Aviation Medicine Reports (1964-1980) and Civil Aeromedical Research Institute Reports (1961-1963) is presented as a reference for those engaged in aviation medicine and related activities. It provides a listing of all FAA aviation medicine reports published from 1961 through 1980 by year, number, author, title, and subject. (Author)

AN (1) AD-A099 961/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION LOS ANGELES CA WESTERN REGION

TI (6) San Francisco International Airport Operations Improvement Program.

RD (11) 1981
PG (12) 20 Pages
RC (20) Unclassified report
DE (23) *Airports
Modification, Delay, Reduction, Runways, Taxiways, Ground traffic
ID (25) *San Francisco International Airport
AB (27) This study of air traffic delay at San Francisco International Airport, its causes, and potential solutions, has identified a comprehensive program of delay reduction measures which, if implemented, has the potential to dramatically reduce the level in cost of delay. The potential cost savings outlined point out the most productive directions in which to focus industry action. The analysis in this study focused on means of increasing the operating efficiency of the airport and reducing aircraft delay through changes in air traffic control procedures, changes in airport use policies, and (to a limited degree) potential airport development actions. Environmental concerns were recognized in developing recommendations, but were not within the scope of the task force study and are not addressed in this report.

AN (1) AD-A100 198/XAG
FG (2) 010400

010600
250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Active Beacon Collision Avoidance System (BCAS) Conference Proceedings, January 27-28, 1981.

RD (11) 1981

PG (12) 265 Pages

RS (14) FAA/RD-81/23

RC (20) Unclassified report

DE (23) *Collision avoidance, *Aviation safety, *Beacons, *Commercial aviation United States Government, Test methods, Performance(Engineering), United States, Aeronautics, Processing, Standards, Flight, Day, Collection, Communities, Operation

ID (25) BCAS(Beacon Collision Avoidance System)

AB (27) The Federal Aviation Administration published a National Standard on Beacon Collision Avoidance System (BCAS) on October 27, 1980, with its objective to receive comments from the aviation community by February 27, 1981. To aid them in the preparation of comments on the Standard, a 2-day conference was held in Washington in 1981, wherein the system was described through presentations, demonstrations, and general discussions. The first day provide a BCAS background and described an overview of what is involved in implementation of a system like BCAS, avionics certification and flight operations, procedures and rules, and described the technical and operational performance of the system. The second day explained the architecture of the Active BCAS and its processing performance capabilities and a summary of test performance to date and the agency plan to test in an airline operation. This volume is a collection of briefings presented during the first day of the conference and handouts from both days. (Author)

AN (1) AD-A116 418/XAG

FG (2) 050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR

FOR AIRPORTS

TI (6) Twelfth Annual Report of Operations under the Airport and Airway Development Act.

DN (9) Annual rept. for Fiscal Year ending 30 Sep 81

AU (10) Martin, Virginia J.

RD (11) 1981

PG (12) 96 Pages

RS (14) FAA-ARP-82-1

RC (20) Unclassified report

DE (23) *Airports

Facilities, Modification, Grants, Federal law

AB (27) Section 24 of the Airport and Airway Development Act of 1970 (P. L. 91-258) requires that the Secretary, Department of Transportation, submit an annual report to Congress of operations under Part II of the Act for the preceeding fiscal year. This report covers operations for the fiscal year ending September 30, 1981. (Author)

AN (1) AD-A093 427/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Detection of Military Aircraft in an Air Traffic Control Radar Beacon System (ATCRBS) Environment.

DN (9) Final rept. for period ending Jun 80

AU (10) Hazelwood, Carl

RD (11) Dec 1980

PG (12) 27 Pages

RS (14) FAA-CT-80-37

RC (20) Unclassified report

DE (23) *Jet fighters, *Radar beacons, *Air traffic control systems

Detection, Radar tracking, Transponders, Aircraft antennas, Antenna radiation patterns, Flight testing

ID (25) ATCRBS(Air Traffic Control Radar Beacon System), LPN-FAA-031-241-820

AB (27) An initial survey and analysis of military Air Traffic Control Radar Beacon System (ATCRBS) transponder problems was conducted as a result of transponder performance analyzer (TPA) measurement difficulties encountered at Dobbins Air Force Base, Georgia, and from field problem reports from the Atlanta Terminal, New York and Washington Centers, and other areas. The information assembled and presented in this report demonstrates potential ATCRBS problems with high performance military aircraft in fringe areas of coverage and particularly with the Automated Radar Terminal Systems (ART's) . Aircraft antenna patterns and switching are of primary concern. (Author)

AN (1) AD-A093 553/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Microwave Landing System (MLS) Clearance Format Assessment Tests.

DN (9) Data rept. Jan-Feb 80

AU (10) McFadden,Robert

RD (11) Dec 1980

PG (12) 54 Pages

RS (14) FAA-CT-80-46

RC (20) Unclassified report

DE (23) *Microwave landing systems

Experimental data, Flight testing, International, Standards

ID (25) LPN-FAA-075-725-470

AB (27) The purpose of this experiment was to provide static and flight test data with the proposed Microwave Landing System (MLS) clearance format to support the MLS International Standards and Recommended Practices (SARPS) development by the International Civil Aviation Organization (ICAO) working group.

AN (1) AD-A094 079/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Reliability and Maintainability Evaluation of the Tower Cab Digital Display System.

DN (9) Final rept. Aug 79-Feb 80

AU (10) Moss,Arthur R.

Apostolakis,George C.

RD (11) Dec 1980

PG (12) 48 Pages

RS (14) FAA-CT-80-32

RN (18) FAA-RD-80-104

RC (20) Unclassified report

DE (23) *Air Traffic Control Systems, *Digital systems, *Airport control towers

Test and evaluation, Reliability, Maintainability, Telephone lines, Noise(Electrical and electromagnetic), High temperature, Data acquisition, Experimental data, Tables(Data), Data reduction

ID (25) LPN-FAA-142-171-540

AB (27) A reliability and maintainability evaluation was performed on eight Tower Cab Digital Display (TCDD) systems located at four Florida air traffic control (ATC) facilities. Data were collected between August 25, 1979, and February 29, 1980. Analysis of these data showed that 21 chargeable hardware failures occurred (excluding the telephone lines). This corresponds to an overall system mean-time-between-failures (MTBF) of 1,001 hours and a mean-time-to-repair (MTTR) of 2.9 hours. In addition to the chargeable hardware failures, many system outages which

could be attributed to transitory, environmental, or undefined causes occurred. These outages included noisy telephone lines, frequent automatic restarts, and high ambient room temperatures. The measured MTBF for a subset of the system was found to be lower than the corresponding predicted value. The 2.9-hour measured MTTR is considered excessive. Recommended actions for several design changes are included. (Author)

AN (1) AD-A094 124/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Discrete Address Beacon System (DABS) Receiver and Air Traffic Control Radar Beacon System (ATCRBS) and DABS Processor Subsystem Tests.

DN (9) Final rept. Feb-Dec 79

AU (10) Baker,Leonard H.

RD (11) Dec 1980

PG (12) 59 Pages

RS (14) FAA-CT-80-11

RN (18) FAA-RD-80-75

RC (20) Unclassified report

DE (23) *Radar beacons, *Radar receivers, *Air traffic control systems
Monopulse radar, Video signals, Processing equipment, Industrial plants, Analog to digital converters, Test methods, Performance tests, United States government, Performance(Engineering), Interrogators, Optimization, Aeronautics, Requirements, Parameters, Engineering, Processing, Variables, Receivers, Statics

AB (27) This report describes the subsystem interrogator and processor tests conducted by the Federal Aviation Administration (FAA) Technical Center on the engineering laboratory model of the Discrete Address Beacon System (DABS). These tests were conducted to determine the performance of the multichannel receiver and the Air Traffic Control Radar Beacon System (ATCRBS) and DABS processors. These performance test results supplement the functional subsystem testing performed by Texas Instruments, Incorporated during the factory tests. The results of the receiver tests were used to determine the operating parameters and performance of the monopulse receiver and the operating characteristics of the video quantizer. The ATCRBS reply processor tests identified the static performance and characteristics of the variable parameters in this unit. The DABS reply processor tests defined the performance of the critical elements in the DABS processor. These elements were the video digitizer, the message bit and monopulse processing, and the

error detection and correction. Identification and optimization of the characteristics of the variable parameters of this unit were determined. It was concluded that the subsystems tested met the requirements specified in the DABS engineering requirement (ER) FAA-ER-240-26. (Author)

AN (1) AD-A099 584/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) High Altitude Pollution Program Scientific Advisory Committee Meeting (3rd) Held at Washington, DC on 23-25 January 1980. Executive Summary.

RD (11) Dec 1980

PG (12) 38 Pages

RS (14) FAA/EE-80-36

RC (20) Unclassified report

DE (23) *Air pollution, *Pollutants

Ozone, Nitrogen oxides, Aircraft exhaust, Air quality, Concentration(Chemistry), Stratosphere, Troposphere, Atmosphere models, Two dimensional, Conferencing(Communications), Environmental impact statements, High altitude

AB (27) The primary focus of the third meeting was to assess the applicability and reliability of two-dimensional atmospheric models of the effects of aircraft pollutants on the environment. This is a summary of the Committee's presentation of findings.

AN (1) AD-A106 675/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft, Calendar Year 1980.

DN (9) Annual rept.

RD (11) 31 Dec 1980

PG (12) 279 Pages

RC (20) Unclassified report

DE (23) *Civil aviation

Census, Aircraft, Commercial aircraft, Aircraft engines, Commercial aviation, Statistical data, Tables(Data)

ID (25) General aviation

AB (27) This report presents information about the U.S. Civil aircraft fleet.

It includes detailed tables of air carrier aircraft and an inventory of registered aircraft by manufacturer and model, and general aviation aircraft by state and county of the owner. (Author)

AN (1) AD-A109 289/XAG

FG (2) 010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1980.

DN (9) Annual rept.

RD (11) 31 Dec 1980

PG (12) 183 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic

Aviation accidents, Commercial aviation, Statistical data, Terminal flight facilities, Airports, Passengers, International airports, Handbooks

ID (25) General aviation

AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, The National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, and a Glossary of the terms used in this publication. (Author)

AN (1) AD-A122 164/XAG

FG (2) 010600

050300

050400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) National Aviation System Development and Capital Needs for the Decade 1982 - 1991.

RD (11) Dec 1980

PG (12) 183 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Management planning and control, *Economic analysis

Economic impact, Forecasting, Growth(General), Investments, Inflation(Economics), Air traffic control systems, Navigational aids, Airports, Requirements, Costs, Aircraft, Manpower,

Performance(Engineering), Safety, Capacity(Quantity), Productivity,
United States Government

AB (27) Congress has given the Federal Aviation Administration (FAA) clear statutory authority for managing the airspace of the United States. According to the Federal Aviation Act of 1958, the FAA is responsible for the efficient utilization of airspace; developing, establishing, operating and maintaining a common system of navigation; providing air navigation and air traffic control services; and for establishing aircraft and airmen requirements for operation within the system. The FAA is obviously, therefore, responsible for managing the growth-related problems the National Airspace System will experience during the next decade. This study attempts to correct those shortcomings and to estimate the capital and staffing needs necessary to handle forecasted growth during the 1982-1991 decade. With respect to Facilities and Equipment (F/E) investments, five investment strategies for the air traffic control and air navigation systems have been formulated. Using existing, rough and very conservative estimates, benefits have been calculated for each strategy in terms of safety, capacity and productivity, measured by dollars, lives saved and hours of delay prevented.

AN (1) AD-A098 706/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Vocational Options for Those with Sickle Cell Trait: Questions about Hypoxemia and the Industrial Environment

AU (10) McKenzie, Jess M.

RD (11) Nov 1980

PG (12) 16 Pages

RS (14) FAA-AM-80-20

RC (20) Unclassified report

DE (23) *Careers, *Sickle cells

Patients, Physical fitness, Risk, Life expectancy, Aviation safety, Aviation personnel, Hazards, Industries, Recreation

ID (25) Sickle cell trait, Hypoxemia

AB (27) This report is based on an oral presentation to physicians interested in the treatment of patients with sickle cell disease. Many patients have parents and siblings who possess the sickle cell trait (SCT), and who often require not only genetic counseling, but also information about their own health. Some have been informed that they cannot pursue careers in aviation. Some have been told that they are at special risk

from the hypoxemia effects of heavy exertion, especially the exertion associated with some sports. A few believe that certain elements of the industrial environment are unusually hazardous to them. An examination of the literature reveals little evidence in support of any of these beliefs. Most, if not all, unfavorable reports are clouded by faults of various kinds. All of them are of anecdotal type, based on small numbers of cases; the evidence offered is circumstantial. On the other hand, experiments designed to test the susceptibility of those with SCT have yielded favorable results. Studies of large populations indicate that those with the trait have normal health and normal life expectancy. Also, there are almost as many favorable anecdotal reports as there are negative ones. We must conclude that people with SCT are just as tolerant to aviation and industrial environments as those who are homozygous for hemoglobin A. Also, there are strong indications that those with SCT are not endangered by heavy physical exertion, including the exertion of athletic competition. (Author)

AN (1) AD-A100 370/XAG

FG (2) 010500

050100

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) The FAA Plans and Programs for the Future Airport and Air Traffic control System.

RD (11) 13 Nov 1980

PG (12) 183 Pages

RC (20) Unclassified report

NO (21) Briefing papers presented at an Office of Technology Assessment Seminar.

DE (23) *Air traffic control systems, *Airports

Planning, Aviation safety, Air space, Air traffic, Capacity(Quantity), Forecasting

AB (27) Contents: FAA's Role in Providing a Safe and Efficient System; FAA forecasts of Aviation Activity, 1981-1992 - Airport and Airway System Capacity and Delay Overview; Today's ATC System-Problems and Need for Change; An Overview of the FAA Engineering and Development Program; Scenario for the Future System - The Roadmap of the System of the future -The Impact of Alternative Approaches in Air Traffic Control System Evolution; Airport Capacity Increases--Opportunities, Limitations, and Choices; Near Term System Improvements; Long Term ATC System Improvements; and Nontechnological Alternatives for Balancing Airport/Airspace Supply and Demand.

AN (1) AD-A104 780/XAG

FG (2) 010309
240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Results of FAA Cabin Ozone Monitoring Program in Commercial Aircraft in 1978 and 1979.

AU (10) Rogers, James W.

RD (11) Nov 1980

PG (12) 21 Pages

RS (14) FAA/EE-80-10

RC (20) Unclassified report

DE (23) *Aircraft cabins, *Ozone, *Commercial aircraft, *Air pollution Measurement, Monitors, Instrumentation, High altitude, Long range(Distance), Concentration(Chemistry), Confined environments, Variations

ID (25) Federal Aviation Administration Program, DC-10 aircraft, L-1011 aircraft, B-747 aircraft, DC-8 aircraft, B-707 aircraft

AB (27) This report contains descriptions of the instrumentation and procedures used during the Federal Aviation Administration (FAA) program to measure the concentration of ozone in the cabins of commercial aircraft on revenue flights during 1978 and 1979. Based on the limited data set obtained, the following conclusions are stated: (1) The data set confirms the fact that high concentrations of ozone are at times present in commercial aircraft cabins; (2) The data verifies the increased occurrence of excessive ozone exposure for flights at high altitudes and latitudes; (3) The long-range aircraft (B-747, DC-10, L-1011, DC-8 and B-707), which generally fly at higher altitudes, are more likely to encounter excessive ozone concentrations than short-range aircraft (B-727, B-737 and DC-9).

AN (1) AD-A107 802/XAG

FG (2) 010600
050800
230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) DOT/FAA Human Factors Workshop on AVIATION. Transcript. Volume I.

RD (11) Nov 1980

PG (12) 112 Pages

RC (20) Unclassified report

NO (21) Presented at the Transportation Systems Center, Cambridge, MA, 24-25

Nov 1980. See also Volume 2, AD-A107 803.

DE (23) *Aviation safety

Pilots, Performance(Human), Fatigue(Physiology), Stress(Psychology), Jobs, Overload, Commercial aviation, Man machine systems, Human factors engineering, Workshops, Errors

ID (25) Pilot error, *Workloads

AB (27) This document is a verbatim transcript of the proceedings of the DOT/FAA human Factors Workshop on Aviation held at the Transportation Systems Center in Cambridge, Massachusetts on November 24-25, 1980. No editorial corrections have been made. Additional workshops/symposiums are scheduled to address human factors safety issues. On January 16, the Second FAA commuter Airline Symposium will be devoted to human factors. In addition, another workshop is planned to be held at the Transportation Systems Center during March 1981. Proceedings will remain open until 60 days after the March 1981 workshop and then will be published in their entirety. (Author)

AN (1) AD-A107 803/XAG

FG (2) 010600
050800
230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) DOT/FAA Human Factors Workshop on Aviation. Transcript. Volume II.

RD (11) 25 Nov 1980

PG (12) 219 Pages

RC (20) Unclassified report

NO (21) Presented at the Transportation Systems Center, Kendall Square, Cambridge, MA, 24-25 Nov 80. See also Volume 1, AD-A107 802.

DE (23) *Aviation safety, *Pilots, *Performance(Human)

Fatigue(Physiology), Jobs, Overload, Stress(Psychology), Commercial aviation, Man machine systems, Human factors engineering, Workshops, Errors

ID (25) Pilot error, *Workloads

AB (27) This document is a verbatim transcript of the proceedings of the DOT/FAA human Factors Workshop on Aviation held at the Transportation Systems Center in Cambridge, Massachusetts on November 24-25, 1980. No editorial corrections have been made. Additional workshops/symposiums are scheduled to address human factors safety issues. On January 16, the Second FAA commuter Airline Symposium will be devoted to human factors. In addition, another workshop is planned to be held at the Transportation Systems Center during March 1981. Proceedings will remain open until 60 days after the March 1981 workshop and then will be published in their entirety. (Author)

AN (1) AD-A091 938/XAG

FG (2) 010300
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Summary of Aviation Safety Program Resumes. Cabin Safety.

DN (9) Special rept.

AU (10) Harrison, J. R.

RD (11) Oct 1980

PG (12) 27 Pages

RS (14) FAA-ASF-803

RC (20) Unclassified report

DE (23) *AIRCRAFT CABINS, *AVIATION SAFETY

RESEARCH MANAGEMENT, INFORMATION SYSTEMS, INFLIGHT, AIRCRAFT FIRES,

FIRE HAZARDS, AVIATION FUELS, EVACUATION, ESCAPE SYSTEMS, RESCUES, AVIATION ACCIDENTS

ID (25) Crashworthiness

AB (27) This report contains a Program Activity Resume and a Project Details listing of those activities supporting the FAA Cabin Safety Program.

The Cabin Safety Activity Resume identifies three sub-programs relating to Inflight, Crashworthiness, and Post Crash safety activities. The sub-programs are identified and reported in the Project Details listing which includes: Inflight Fire, Operational Hazards, Training & Duties, Crash Scenario Definition, Structural Load Analysis, Crashworthy Fuel Tanks, Fuel Fire Hazard, Cabin Interior Materials, Crew Considerations, Crash Rescue, SAFER Advisory Committee and Evacuation Systems.

AN (1) AD-A091 977/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Distance Measuring Equipment Traffic-Loading Capacity Investigation.

DN (9) Interim rept.

AU (10) Postel, Harold

RD (11) Oct 1980

PG (12) 73 Pages

RS (14) FAA-CT-80-41

RN (18) FAA-RD-80-100

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-RD-71-109, AD-737 038.

DE (23) *RADIO NAVIGATION

GROUND STATIONS, AIRPORTS, ILLINOIS, DISTANCE MEASURING EQUIPMENT, COLORADO, FAILURE(ELECTRONICS), UTILIZATION, INTERROGATION, RATES, MEASUREMENT, AIR TRAFFIC

ID (25) VORTAC, O'Hare International Airport, Stapleton International Airport

AB (27) This phase of the project was performed in response to a letter from Acting Chief, Navigation and Landing Division, ARD-300, dated January 17, 1980, under Project 81, tactical air navigational aid

(TACAN)/distance measuring equipment (DME) Systems Support 042-306

TACAN/DME Maintenance/Sustaining Engineering. The project was performed to determine the cause of loss of DME service at the O'Hare

International Airport, Chicago, Illinois, and the Stapleton

International Airport very high frequency omnidirectional radio range

tactical air navigational system (VORTAC), Denver, Colorado. This

report covers the findings of the traffic counts of the O'Hare DME and

Stapleton VORTAC. The results show that these systems were being interrogated at rates in excess of the systems' capacities. (Author)

AN (1) AD-A092 538/XAG

FG (2) 010500

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Summary of Transponder Data for Atlanta, Georgia, Area.

DN (9) Final rept.

AU (10) Greenberg,Max

RD (11) Oct 1980

PG (12) 37 Pages

RS (14) FAA-CT-80-39

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Radar beacons, *Radar scanning, *Area coverage

Test and evaluation, Georgia, Transponders, Performance(Engineering),

Analyzers, Flight testing, Aircraft, Aeronautics, Performance tests,

Experimental data, Graphs, Failure, Target acquisition, Target

classification

ID (25) TPA(Transponder Performance Analyzer), Atlanta(Georgia),

LPN-FAA-031-241-820

AB (27) The Federal Aviation Administration (FAA) Technical center was requested by the FAA Southern Region to provide specialized support with the transponder performance analyzer (TPA) in their efforts to

identify and localize Air Traffic Control Radar Beacon System (ATCRBS) coverage problems in the Atlanta, Georgia, Terminal. This support was to provide additional information and backup for other efforts in progress by the Southern Region. System performance tests, standard flight tests, and various other tests had been performed by technical and operational personnel. As a result of these tests, specific problems, localities, and aircraft types involved, beacon transponders became suspect as one source of difficulty. The requested TPA support was provided and data included herein provides the subject information in the transponder area of concern.

AN (1) AD-A093 141/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Evaluation of an Anemometer Calibrator for the Low-Level Wind Shear Alert System.

DN (9) Final rept. 6 Jan-26 Jun 80

AU (10) Versage, Peter V.

RD (11) Oct 1980

PG (12) 18 Pages

RS (14) FAA-CT-80-48

RN (18) FAA-RD-80-118

RC (20) Unclassified report

DE (23) *Anemometers, *Calibration

Test stands, Test equipment, Test methods, Wind shear, Low altitude, Warning systems

ID (25) LLWAS(Low Level Wind Shear Alert System), LPN-FAA-154-452-820

AB (27) This effort was directed toward the evaluation of a Belfort calibration test stand which has been designed and manufactured for calibrating the Belfort type N wind vector transmitters being used at operational airports for the Low-Level Wind Shear Alert System (LLWAS). Results indicate that the calibration test stand allows accurate calibration of the wind vector transmitter (anemometer), but some improvement in design is recommended before quantity procurement is considered.

AN (1) AD-A093 425/XAG

FG (2) 130800

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Omega Transmitter Outages January to December 1979.

DN (9) Data rept.

AU (10) Rzonca, Lorraine

RD (11) Oct 1980

PG (12) 18 Pages

RS (14) FAA-CT-80-196

RN (18) FAA-RD-80-113

RC (20) Unclassified report

NO (21) Continuation of Rept. nos. FAA-NA-78-61-LR and FAA-NA-78-61-LR.

DE (23) *Omega navigation, *Reliability

Downtime, Repair, Area coverage, Global

ID (25) LPN-FAA-043-311-520

AB (27) An investigation of Omega transmitter outages during 1979 was conducted with emphasis on the occurrence of simultaneous downtimes. Data presented includes frequency and duration of outages and total yearly percentage shutdown for each transmitter, with scheduled outages specifically noted. The most significant dual outage lasted more than 5 days when Norway antenna repairs were coincident with Argentina annual maintenance. (Author)

AN (1) AD-A097 046/XAG

FG (2) 010309

230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Evaluation of the Protective Efficiency of a New Oxygen Mask for Aircraft Passenger Use to 40,000 Feet

AU (10) DESteiguer, D.

Saldivar, J. T.

RD (11) Oct 1980

PG (12) 33 Pages

RS (14) FAA-AM-80-18

RC (20) Unclassified report

DE (23) *Oxygen masks, *Aircraft equipment

Passengers, Flight crews, Decompression, High altitude, Respiration, Flow rate, Partial pressure, Oxygen, Carbon dioxide, Nitrogen, Hyperventilation, Test methods, Altitude chambers, Test and evaluation, Performance(engineering), Passenger aircraft

AB (27) This report describes the methods used in the evaluation of a new continuous-flow, phase-dilution passenger oxygen mask for compliance to FAA Technical Standard Order (TSO)-C64 requirements. Data presented include end expiratory partial pressures for oxygen, carbon dioxide, and nitrogen at selected altitudes and oxygen flow rates. Data indicate that the test mask does meet the requirements for TSO-C64

certification. (Author)

AN (1) AD-A097 276/XAG

**FG (2) 050800
050900**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

**TI (6) An Exploratory Investigation of Various Assessment Instruments as
Correlates of Complex Visual Monitoring Performance**

**AU (10) Thackray, Richard I.
Touchstone, R. Mark**

RD (11) Oct 1980

PG (12) 20 Pages

RS (14) FAA-AM-80-17

RC (20) Unclassified report

**DE (23) *Visual perception, *Vigilance, *Monitoring, *Performance tests, *Air
traffic controllers
Males, Females, Variables, Simulation, Correlation techniques,
Detection, Predictions**

**AB (27) The present study examined a variety of possible predictors of complex
monitoring performance. The criterion task was designed to resemble
that of a highly automated air traffic control radar system containing
computer-generated alphanumeric displays. Forty-five men and women were
administered a battery of tests and task prior to performing the
criterion task. Extreme groups, separated on the basis of their
performance decrement scores, differed significantly on 6 of the 28
predictor variables. In general, the significant relationships obtained
were in accordance with expectations. All correlations were low which
agrees with the findings of previous studies of predictors of
performance on simple vigilance tasks. Since the criterion task
simulated the task requirements of advanced, highly automated air
traffic control systems still in the planning stage, the utility of any
of the significant predictors in predicting performance of controllers
on contemporary systems would require further research using actual
performance of present-day controllers on such systems as the
criterion. (Author)**

AN (1) AD-A098 096/XAG

**FG (2) 010600
050400
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
SAFETY**

**TI (6) Summary of Federal Aviation Administration Responses to National
Transportation Safety Board Safety Recommendations.**

DN (9) Quarterly rept. Jul-Sep 80

AU (10) Harrison, J. R.

RD (11) Oct 1980

PG (12) 252 Pages

RS (14) FAA-ASF-81-1

RC (20) Unclassified report

**DE (23) *Aviation safety, *Accident investigations, *Aviation accidents
Civil aviation, Response, Decision making, Regulations, Reports,
Failure, National transportation system, Air traffic control systems**

**AB (27) This report contains NTSB recommendations and all FAA responses to
Board recommendations that were delivered to the Board during the
applicable quarter. In addition, the report includes NTSB requests and
FAA responses concerning reconsiderations, status reports, and followup
actions. The Table of Contents for this report reflects only those NTSB
recommendations which are still open pending FAA action (i.e., those
that have not been designated as 'Closed' by the NTSB as a result of
acceptable action). Accordingly, the Table of Contents may reflect a
number of multiple recommendations (example: A-80-27 through 29), but
background material is included only for those recommendations which
remain in an 'Open' status. Background information for those
recommendations which have been closed is available in FAA headquarters
files. (Author)**

AN (1) AD-A098 766/XAG

**FG (2) 050900
060500**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

**TI (6) Characteristics of Medically Disqualified Airman Applicants in Calendar
Years 1977 and 1978**

AU (10) Dark, Shirley J.

RD (11) Oct 1980

PG (12) 28 Pages

RS (14) FAA-AM-80-19

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-AM-78-25, AD-A061 074.

DE (23) *Air Force personnel, *Medical examination, *Pilots

Aviation personnel, Qualifications, Regulations, Health, Deficiencies, Rates, Statistical data, Tables(Data), Pathology, Cardiovascular diseases, Myocardial infarction

ID (25) Medical certification, Age factor

AB (27) This study provides comprehensive data reflecting pertinent denial rates with respect to the medical and general attributes of those airmen denied medical certification in calendar years 1977 and 1978. Also provided are such descriptive epidemiologic data as age, sex, occupation, class of medical certificate applied for, total flying time, and cause-specific annual denial rates for medically disqualified applicants. The annual denial rate based on airman applicants was 6.8 per 1,000 airmen. By class of certificate applied for, the annual denial rate per 1,000 applicants was 4.3 for first class, 4.9 for second class, and 8.9 for third class. As anticipated, general aviation and new applicants contributed greatly to total denials, reflecting that the latter are being screened for the first time. Eighty-three percent of all denied applicants indicated nonaeronautical occupations on their medical application and 49 percent indicated less than 40 hours of total flying time. The most significant causes for denial (regardless of class applied for) were cardiovascular, the miscellaneous pathology category (endocrinopathies, disqualifying medications, and administrative denials), neuropsychiatric, and, at a substantially lower level, eye pathology. (Author)

AN (1) AD-A099 170/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) FAA Forecast Conference Proceedings (6th) Held at Washington, DC on 21 October 1980.

DN (9) Annual rept.

RD (11) Oct 1980

PG (12) 53 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *SYMPOSIA

FORECASTING, COMMERCIAL AVIATION, AIRCRAFT INDUSTRY, REGULATIONS, FORECASTING, AIR TRAFFIC, AVIATION FUELS, COSTS

ID (25) Deregulation

AB (27) Partial Contents: Air Carrier Panel Discussion; Airlines in the 1980's: A World View; Fundamentals of Airline Growth: A Manufacturer's Perspective; Long-Term Traffic Growth and Deregulation; Commuter and General Aviation Panel Discussion; and Future Energy Resources for

Civil Aviation.

AN (1) AD-A099 469/XAG

FG (2) 040100

070200

070300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Disproportionation Reactions of Small Inorganic Radicals in the Context of Intermediate Complex Formation.

DN (9) Final rept.

AU (10) Tsang, Wing

RD (11) Oct 1980

PG (12) 67 Pages

RS (14) FAA/EE-80-45

RC (20) Unclassified report

NO (21) Prepared in cooperation with National Bureau of Standards, Washington, DC. Chemical Kinetics Div.

DE (23) *Chemical radicals, *Complex compounds, *Chemical reactions Hydroperoxides, Nitrogen oxides, Chlorine compounds, Atmospheric chemistry, Stratosphere, Troposphere, Reaction kinetics, Molecular structure

AB (27) The reactions: $\text{HO}_2 + \text{NO}$ yields $\text{HO} + \text{NO}_2$, $\text{ClO} + \text{NO}$ yields $\text{Cl} + \text{NO}_2$, $\text{HO}_2 + \text{HO}_2$ yields $\text{H}_2\text{O}_2 + \text{O}_2$, and $\text{HO}_2 + \text{OH}$ yields $\text{H}_2\text{O} + \text{O}_2$ have been analyzed within the framework of the formation of an intermediate complex. On the basis of RRKM calculations it is possible to infer that the first two reactions will not show any pressure dependence under stratospheric or tropospheric conditions. The observed small inverse temperature dependences are in accord with behavior of radical combination processes. However, despite exploration of wide range of parameters, it has not been possible to reproduce the observed pressure dependences for the last two processes through such calculations. The proper interpretation of the experiments and the nature of the H_2O_4 and H_2O_3 complexes are thus open to question. (Author)

AN (1) AD-A110 355/XAG

FG (2) 010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semi-annual rept. no. 12, 1 Jan-30 Jun 80.

RD (11) 14 Oct 1980

PG (12) 42 Pages

RS (14) FAA-ACS-82-12

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Civil aviation, *Security, *Crimes

Transport aircraft, Bombs, Threats, Sabotage, Crisis management, Strategy, Training, Security personnel, Law enforcement, Threat evaluation, Inspection, Passengers, Detection, Weapons, Explosives detection, Law enforcement, Operational effectiveness, Aviation safety, Regulations

ID (25) Hijacking

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

SE (34) 12

AN (1) AD-A089 342/XAG

FG (2) 210400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Engineering and Development Program Plan, Antimisting Fuel.

RD (11) Sep 1980

PG (12) 62 Pages

RS (14) FAA-CT-80-162

RN (18) FAA-ED-18-4

RC (20) Unclassified report

DE (23) *Aviation fuels, *Fuel additives, *Antifogging agents

Kerosene, Aviation accidents, Crashes, Flammability, Polymers, Specifications, Economics

ID (25) Antimisting fuels, LPN-FAA-181-520-100

AB (27) A phased program is identified to direct research and development efforts to: (a) determine if the use of antimisting fuel is feasible; (b) develop recommendations as to its introduction and use in civil aviation operations; and (c) demonstrate its effectiveness in a crash instance, and (d) assess the economic reasonableness in support of regulatory actions. The basic program utilizes an existing high molecular weight polymer additive dissolved in kerosene using a carrier

fluid as a representative agent to prove the concept of uses of such fuels. Parallel to this main effort are investigations to identify other potentially acceptable fuels. Estimated funding and proposed scheduling are included. (Author)

AN (1) AD-A090 616/XAG

FG (2) 010500

170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Tower Cab Digital Display Operational Evaluation.

DN (9) Final rept. Jan-Mar 80

AU (10) Karsten, Philip

RD (11) Sep 1980

PG (12) 17 Pages

RS (14) FAA-CT-80-31

RN (18) FAA/RD-80-101

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Radar equipment, *Display systems

Man computer interface, Digital systems, Computer applications, Interactive graphics, Real time, Modems, Weather communications, Aerial targets, Target recognition, Tables(Data), Test and evaluation

AB (27) This report discusses the operational evaluation of the Tower Cab Digital Display (TCDD). The TCDD is used for air traffic control operations in the St. Petersburg control tower and the MacDill Air Force Base ground control approach (GCA) and control tower facilities as part of the Automated Radar Terminal System (ARTS) IIIA Remote Tower Display System. Evaluation objectives were to determine the usefulness and suitability of TCDD operational features. Resultant findings will be input to the Systems Research and Development Service (SRDS) technical data package for future production TCDD's. For the most part, resultant findings are favorable to existing TCDD capabilities. Some modifications are recommended for future production models. (Author)

AN (1) AD-A091 011/XAG

FG (2) 010300

010500

210500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Exhaust Emissions Characteristics and Variability for Pratt and Whitney JT8D-7A Gas Turbine Engines Subjected to Major Overhaul and Repair.

DN (9) Final rept. Nov 78-Feb 79
AU (10) Becker, Eric E.
Frings, Gary
Cavage, William C.
RD (11) Sep 1980
PG (12) 55 Pages
RS (14) FAA-CT-79-53
RC (20) Unclassified report
DE (23) *Turbofan engines, *Air pollution, *Environmental impact statements
Airports, Emission, Exhaust gases, Carbon monoxide, Nitrogen oxides,
Hydrocarbons, Aircraft maintenance
ID (25) JT8D-7A gas turbines, Kennedy International Airport
AB (27) Seven Pratt and Whitney Aircraft (PWA) JT8D-7A turbofan engines were
tested at Kennedy International Airport, New York, to evaluate exhaust
emissions characteristics and data variability after overhaul. The
measured data show that the engines tested did not meet the
Environmental Protection Agency (EPA) emission standards. A comparison
of the measured data, obtained from the seven overhauled engines
evaluated under this program, with new engine data obtained from PWA
show that there is a great deal of similarity between the two sets of
data. Differences shown in this report between new engine and
overhauled engine data are due to the quantity of the engines sampled;
the new engine data represent a larger sample size. Satisfactory data
can be measured by using the test procedures, instrumentation, and
equipment defined in this report. (Author)

AN (1) AD-A091 288/XAG
FG (2) 010600
050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
TI (6) FAA Aviation Forecasts, Fiscal Years 1981-1992.
RD (11) Sep 1980
PG (12) 69 Pages
RS (14) FAA-AVP-80-8
RC (20) Unclassified report
DE (23) *Civil aviation, *Forecasting, *United States Government
Management planning and control, Economics, Energy conservation, Air
traffic control systems, Airports, Landing fields, Standards,
Regulations
ID (25) Federal Aviation Agency
AB (27) The aviation activity at FAA towered airports, in the aerospace under
the control of the Air Route Traffic Control Centers, and the services

provided by the Flight Service Stations are forecast for the several
user groups--trunk and local service airlines, commuter airlines and
air taxis, general aviation, and the military. Discussion of trends and
events with special implications for aviation highlight the challenges
and opportunities that lie ahead for aviation. Also presented are
forecasts based on three alternative scenarios: economic expansion,
energy conservation and stagflation. The alternative scenario forecasts
provide a range around the baseline forecasts for planning purposes
both within the FAA as well as for other users of the FAA forecasts.
(Author)

AN (1) AD-A091 292/XAG
FG (2) 010600
130200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY
TI (6) Noise Levels and Data Correction Analysis for Seven General Aviation
Propeller Aircraft.
DN (9) Final rept.
AU (10) Ford, David W.
Rickley, Edward J.
RD (11) Sep 1980
PG (12) 376 Pages
RS (14) FAA/EE-80-26
RC (20) Unclassified report
DE (23) *Aircraft noise, *Propellers(Aerial), *Civil aviation, *Commercial
aircraft
Variables, Regulations, Ratios, Weight, Horsepower, Instrumentation,
Takeoff, Approach, Flight, Level(Quantity)
ID (25) Flyover
AB (27) This document reports noise levels of a general aviation propeller
aircraft noise test at the FAA National Aviation Facility Experimental
Center located in Atlantic City, New Jersey. The test was performed to
acquire noise data on general aviation type aircraft and examine how
these noise levels are influenced by variables such as distance,
aircraft speed, power settings, and propeller speeds. Aircraft were
tested during takeoff, approach, and flyover modes and data are given
in EPNL and in 'A'-weighted decibels. All measurements were performed
in accordance with FAR 36 Appendix C and Appendix F procedures.
(Author)

AN (1) AD-A091 637/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Flight Test Investigation of LORAN-C for en Route Navigation in the
Gulf of Mexico.

DN (9) Final rept.

AU (10) Pursel, Robert

RD (11) Sep 1980

PG (12) 100 Pages

RS (14) FAA-CT-80-18

RN (18) FAA-RD-80-47

RC (20) Unclassified report

DE (23) *LORAN, *NAVIGATION REFERENCE, *FLIGHT TESTING

HELICOPTERS, TEST AND EVALUATION, PULSE TRANSMITTERS, A BAND,
INERTIAL

NAVIGATION, MEXICO GULF, PASSIVE SYSTEMS, SIGNAL TO NOISE RATIO,
DISPLAY SYSTEMS, COMPUTER APPLICATIONS, AVIONICS, INTEGRATED
SYSTEMS,

MICROCOMPUTERS

ID (25) CV-580 aircraft, LPN-FAA-045-390-130

AB (27) Flight tests of a long range navigation (LORAN-C) airborne navigator
were conducted in the Gulf of Mexico oil exploration and production
area. Two systems were installed in a CV-580 aircraft to examine
simultaneously the performance from two different LORAN-C triads. Four
separate test routes were flown over a period of 3 days. These routes
covered the eastern, central, and western test areas, and an overland
route from Houston, Texas, to Lafayette, Louisiana. An inertial
navigation system (INS) was used as a position reference standard. The
INS data were updated to correct for drift. Accuracy of the position
reference from the corrected INS data was + or - 0.3 nautical miles
(nmi). The flight test data collected indicated that both the Malone,
Raymondville, Jupiter and the Malone, Raymondville, Grangeville triads
provided en route LORAN-C navigation capability which met Federal
Aviation Administration (FAA) Advisory Circular AC-90-45A accuracy
requirements except when operating near the baseline extension of the
Malone-Grangeville baseline when using the Malone, Raymondville,
Grangeville triad. (Author)

AN (1) AD-A092 240/XAG
FG (2) 050100
200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY

TI (6) The Need for Airport Noise Monitoring Systems. Their Uses, and Value in
Promoting Civil Aviation.

DN (9) Final rept.

AU (10) Newman, J. Steven

RD (11) Sep 1980

PG (12) 41 Pages

RS (14) FAA/EE-80-40

RC (20) Unclassified report

DE (23) *Aircraft noise, *Monitoring

Airports, Aircraft, Radar tracking, Statistical analysis

AB (27) The need for airport noise monitoring systems is addressed from a
variety of perspective focusing on potential benefits to airport
proprietors, the airlines, noise impacted airport communities, and
civil aviation in general. The operation and cost of typical noise
monitoring systems is discussed. Various techniques for noise data
presentation are also reviewed. The uses of radar tracking data in
providing aircraft identification, position and ground track
information is explored. Legal requirements for monitoring are
specified and airport use restrictions are discussed. A list of U.S.
and foreign airports with noise monitoring systems is presented. FAA
research efforts pertaining to airport noise monitoring systems are
also outlined. (Author)

AN (1) AD-A092 291/XAG

FG (2) 210200

210500

240100

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Exhaust Emission Characteristics and Variability for Maintained General
Electric CF6-50 Turbofan Engines.

DN (9) Final rept. Jul-Oct 79

AU (10) Frings, Gary

RD (11) Sep 1980

PG (12) 57 Pages

RS (14) FAA-CT-80-36

RC (20) Unclassified report

DE (23) *Turbofan engines, *Exhaust gases, *Air pollution

Emission, Classification, Exhaust nozzles, Variables, Test facilities,
Parameters, Maintenance, Carbon monoxide, Hydrocarbons, Nitrogen

oxides, Fuels

ID (25) Exhaust emission, Variability, THC(Total Hydrocarbon),
LPN-FAA-201-521-100

AB (27) Five General Electric (GE) CF6-50 turbofan engines were tested at the GE overhaul facility in Ontario, California, to quantify and determine the variability of the exhaust emission levels. The effects of heavy maintenance on these emission levels were also studied. Only two of the engines tested actually received major maintenance. Consequently, the data collected is limited in quantity. Conclusions, observations, and recommendations are presented based on this limited data base. No correlation of exhaust emission levels and type of maintenance was possible. The exhaust emission levels of carbon monoxide (CO) and oxides of nitrogen (NOx) have been determined; total hydrocarbon (THC) levels are not quantified. The variability of the CO and NOx species is less than five percent, THC variability is almost 30 percent. The engine emissions did not meet the current or proposed federal standards. Ninety percent of the turbine engine exhaust emissions are produced at the idle power mode. The operational parameters for this important (from the stand-point of emission data collection) mode are vague and should be more defined. The type of fuel used for emission testing has a significant effect on the resultant exhaust emission levels. (Author)

AN (1) AD-A092 450/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Consolidated Car Display: A Summary Report of the Process and the Results of the Consolidation of Critical and Supplementary Terminal Area Air Traffic Control Information for Display Presentation.

DN (9) Final rept. Jan 78-Jun 79

AU (10) Spanier, Gerard

RD (11) Sep 1980

PG (12) 49 Pages

RS (14) FAA-CT-80-20

RN (18) FAA-RD-80-73

RC (20) Unclassified report

DE (23) *Display systems

Air traffic control systems, Airport control towers, Integrated systems

ID (25) TRACON(Terminal Radar Control), Consolidation, LPN-FAA-219-151-120

AB (27) This report describes the work performed within the Systems Simulation and Analysis Division, ACT-200, to produce an engineering requirement for a terminal area display system for field implementation by the

Airway Facilities Service. The report details the basic project efforts to define a data display system to consolidate many of the Terminal Radar Approach Control Facility (TRACON) and tower cab controller's indicators, displays, alarms, controls, status lights, weather data presentations, etc., to reduce physical size, improve work station efficiency, and enhance the management and use of Air Traffic Control (ATC) oriented data. The report covers the data collection process; the requirements determination process; the technology assessment performed; the design development, and validation of certain hardware/software components; a risk assessment of the unique aspects of the system design; and the engineering requirement form.

AN (1) AD-A093 027/XAG

FG (2) 050600

120500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Federal Aviation Administration's Radar Training Facility and Employee Selection and Training

AU (10) Boone, James O.

Van Buskirk, Linda

Steen, Joann

RD (11) Sep 1980

PG (12) 28 Pages

RS (14) FAA-AM-80-15

RC (20) Unclassified report

DE (23) *Job training, *Personnel selection, *Radar operators, *Air traffic controllers, *Computerized simulation

Students, Skills, Radar equipment, Scoring, Prototypes, Air traffic

control terminal areas, Computer programs, Flight paths, Pilots,

Instructors, Monitoring, Test and evaluation, Performance(Human),

Mathematical models, Regression analysis

ID (25) LPN-FAA-AM-C-79-PSY-70, LPN-FAA-AM-C-80-PSY-82

AB (27) The Federal Aviation Administration (FAA) has recently constructed a Radar Training Facility (RTF) in Oklahoma City, Oklahoma, to aid in screening appropriate personnel for work in radar air traffic control (ATC). The approach is based on the idea that limited exposure to simulated radar ATC in a controlled and measured environment will lead to the identification of persons who possess the skills and attributes necessary for success in this type of work. This report describes the results of a study performed at the FAA's National Aviation Facilities Experimental Center (now FAA Technical Center) comparing an

over-the-shoulder method of scoring student performance with scoring by computer-derived measures for use in screening at the RTF. Results indicate that the computer-derived measures are far more reliable than over-the-shoulder scoring and the computer-derived measures predict a global rating of potential success in radar ATC at least as well as over-the-shoulder scoring. The implications of the results are discussed in relation to other automated training systems. (Author)

AN (1) AD-A093 266/XAG

FG (2) 050800

061000

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Stress, Anxiety, and the Air Traffic Control Specialist: Some Conclusions from a Decade of Research

AU (10) Smith, Roger C.

RD (11) Sep 1980

PG (12) 18 Pages

RS (14) FAA-AM-80-14

RC (20) Unclassified report

DE (23) *Air traffic controllers

Stress(Physiology), Stress(Psychology), Anxiety, Work, Questionnaires, Scoring, Measurement

ID (25) LPN-FAA-AM-C-80-PSY-74, LPN-FAA-AM-C-80-PSY-79

AB (27) This paper summarizes a decade of research evaluating possible stress effects of work on Air Traffic Control Specialists (ATCSs). Studies were conducted at a variety of large and small air traffic facilities. A visit of several days to each facility was part of an interdisciplinary research effort involving physiological and biochemical, as well as psychological, assessments. The principal psychological measure was the State-Trait Anxiety Inventory (STAI). The STAI and other questionnaires were administered at the beginning and end of three to five different work shifts scheduled at a facility. The findings showed that controller groups scored significantly below college student norms on both the A-state (current anxiety level) and A-trait (anxiety proneness) measures of the STAI. Results with mood adjective checklists were similar. The findings also showed that anxiety levels (1) increased across an 8-hr work shift and (2) were higher on shifts rated 'difficult' than they were on 'easy' shifts. The establishment of adult norms for the STAI was undertaken to provide a better comparison for ATCS data. Results of those efforts indicated that ATCSs had lower

anxiety scores than the normal adult population. Moreover, A-state scores increased from the beginning to end of work shifts for employees in a variety of non-air-traffic jobs (e.g., engineers), just as they did for ATCSs. Thus ATCSs are well within normal limits on every indicator of psychological states used in these studies and appear to experience less anxiety than is the average in other work settings.

AN (1) AD-A093 426/XAG

FG (2) 010301

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Helicopter Noise Contour Development Techniques and Directivity Analysis.

DN (9) Preliminary rept.

AU (10) Newman, J. Steven

RD (11) Sep 1980

PG (12) 43 Pages

RS (14) FAA/EE-80-41

RC (20) Unclassified report

DE (23) *Aircraft noise, *Helicopters

Acoustic measurement, Mapping, Contours

AB (27) This paper briefly summarizes techniques which have been developed for use in creating helicopter air-to-ground, noise-distance relationships.

Discussion is provided concerning FAA efforts to establish an accurate and practical method (which considers source directivity) for modeling the noise impact associated with helicopter operations. Plots of normalized directivity vectors are provided for eight helicopters in various modes of flight. (Author)

AN (1) AD-A093 428/XAG

FG (2) 010301

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Correlation of Helicopter Noise Levels with Physical and Performance Characteristics.

DN (9) Preliminary rept.

AU (10) Newman, J. Steven

RD (11) Sep 1980

PG (12) 30 Pages
RS (14) FAA/EE-80-42
RC (20) Unclassified report
NO (21) See also Rept. no. FAA-AEE-79-3.
DE (23) *Helicopters, *Aircraft noise
Takeoff, Approach, Subsonic flight, Performance(Engineering), Cross correlation, Statistical analysis
AB (27) This report investigates the correlation between physical and performance characteristics of helicopters and the noise levels which they generate in various operational modes. The analysis is generally empirical although several theoretical functions described in the literature have been examined. The EPNL is the acoustical metric employed in this study. One, two, and three-step multiple regression analyses are conducted for takeoff, approach, and level flyover operations. Plots are provided for the three best single variable regression models for each mode of flight. (Author)

AN (1) AD-A094 426/XAG
FG (2) 061100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Effects of Long-Term Exposure to Low Levels of Ozone: A Review

AU (10) Melton, C. E.
RD (11) Sep 1980
PG (12) 16 Pages
RS (14) FAA-AM-80-16
RC (20) Unclassified report
DE (23) *Ozone, *Dosage, *Toxicity
Concentration(Chemistry), Aviation safety, Vitamin E, Vitamins, Free radicals, Exposure(General), Long range(Time), Humans, Animals
ID (25) LPN-FAA-AM-E-80-PHY-124
AB (27) Available literature regarding long-term effects of ozone on animals and humans is reviewed. Emphasis is placed on reports that have appeared since 1976, but some earlier reports are cited for completeness and perspective. This review shows that ozone concentration is more important than is duration of exposure in determining the effectiveness of an ozone exposure (dose). This conclusion calls into question the validity of the Time-Weighted Average (TWA) as an index of severity of ozone exposure. The literature review further reveals that there is wide variation in susceptibility of different animal species to ozone, making it difficult to apply results of animal experiments to humans. It further appears that a dose

of ozone that is acutely innocuous is also innocuous over the long term. The effects of a symptom-producing dose of ozone are initially cumulative for the first two or three exposures, then an adaptive response may ensue that involves a plateau of response or even a reversal. These effects are shown by both animals and humans. The mechanisms are unknown. Ozone probably causes damage by free radical formation. Free radical scavengers such as vitamins E and C may provide protection against ozone damage. (Author)

AN (1) AD-A098 763/XAG

FG (2) 040100

140200

240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Meeting of the High Altitude Pollution Program Scientific Advisory Committee (2nd), March 28 - 30, 1979, Washington, DC. Executive Summary.

RD (11) Sep 1980

PG (12) 35 Pages

RS (14) FAA/EE-80-08

RC (20) Unclassified report

DE (23) *Air pollution, *Stratosphere

Jet engine exhaust, Ozone, High altitude, Atmosphere models, Validation, Atmospheric chemistry, Pollutants, Field tests, Measurement, Research management, United States Government, Nitrogen oxides, Supersonic aircraft

ID (25) HAPP(High Altitude Pollution Program)

AB (27) The High Altitude Pollution Program (HAPP) Scientific Advisory Committee held its second meeting during March 28-30, 1979 at the Federal Aviation Administration (FAA) Headquarters in Washington, D.C. The purpose of this meeting was to discuss the field measurement experiments. Atmospheric measurements from a critical element in the validation process of the atmospheric models used to assess the impact of the aviation on the stratosphere. The Federal Aviation Administration carries out these measurements in cooperation with the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration. Principal investigators working on different aspects of the field measurements program presented technical progress reports to the Committee. Such issues as the measurement strategy, data utilization, and coordination with other Federal programs were discussed. This Executive Summary includes the Committee

Chairman's presentation of the findings of the meeting to the Acting Director of Environment and Energy as Part I and the Committee's recommendations for field measurements (as noted by the Rapporteur) as Part II. Three appendixes at the end contain the meeting agenda, list of attendees and participants, and the Committee Charter and membership respectively. (Author)

AN (1) AD-A156 521/XAG

**FG (2) 010500
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) FAA Air Traffic Activity, Fiscal Year 1980

AU (10) Carter, P. W.

RD (11) 30 Sep 1980

PG (12) 229 Pages

RS (14) FAA-AMS-220

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *AIR TRAFFIC

AIR SPACE, ROUTING, INTERNATIONAL AIRPORTS, AIRPORT CONTROL
TOWERS,

INSTRUMENT FLIGHT, MILITARY AIRCRAFT, STATISTICAL DATA, AIRCRAFT,
APPROACH, CONTROL CENTERS, FLIGHT, STATIONS, PLANNING, OPERATION

ID (25) FSS(Flight Service Station), ATCTS(Airport Traffic Control Towers),
General Aviation

AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Station (FSSs), Combined Station Towers (CS/Ts), International Flight Service Stations (IFSSs), and Approach Control Facilities. Keywords include: IFR aircraft handled; IFR departures; IFR overs; aircraft operations; instrument operations; instrument approaches; flight services; aircraft contacted; flight plans originated; pilot briefs; air carrier air taxi; general aviation; military.

AN (1) AD-A089 053/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

TI (6) Precision L-Band DME Tests.

DN (9) Interim rept. May-Nov 78

AU (10) Postel, Harold

RD (11) Aug 1980

PG (12) 43 Pages

RS (14) FAA-CT-80-25

RN (18) FAA-RD-80-74

RC (20) Unclassified report

DE (23) *Distance measuring equipment, *Microwave landing systems
Flight testing, Precision, Test and evaluation, Antenna configurations,
Experimental data, Performance(Engineering), Interrogators, L band

ID (25) LPN-FAA-075-725-210

AB (27) This phase of the project was performed under Technical Program Document (TPD) 04-109, subprogram 075-725-210. The report covers the findings on system accuracy and stability of the L-Band Precision Distance Measuring Equipment (PDME). The results showed differences in bias under varying conditions of approaches, orbits, radials, and river runs. The 24-hour overall stability of the system was recorded. Further testing should be performed with simulators that have the desired accuracy required for testing a PDME system so that a baseline can be established. (Author)

AN (1) AD-A089 054/XAG

FG (2) 010600

040200

250200

**CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ**

**TI (6) Evaluation of the Transcribed Weather Broadcast (TWEB) System and
Alternatives. Volume I. Technical and Operational Assessment and Cost
Summary.**

DN (9) Final rept. Mar 78-Aug 79

AU (10) Woodson, Floyd B.

Rood, Richard H.

Barab, John D.

RD (11) Aug 1980

PG (12) 91 Pages

RS (14) FAA-CT-80-6-1

RN (18) FAA-RD-80-63-1

RC (20) Unclassified report

DE (23) *Weather communications, *Communications networks, *Civil aviation
Communication equipment, Multichannel communications, Aviation safety,
Test and evaluation, Failure, Operational effectiveness, Cost
effectiveness, Cost estimates

ID (25) TWEB(Transcribed Weather Broadcast System), LPN-FAA-131-401-840

AB (27) This report contains findings related to the evaluation of the Transcribed Weather Broadcast (TWEB) System in its current national configuration. Primary emphasis is keyed to the technical and operational performance of TWEB at selected representative field locations. In addition, discussions concerning the review and appraisal of TWEB and Pilots Automatic Telephone Weather Answering Service (PATWAS) documentations and system design aspects of the overall TWEB configuration are given. A summary of cost analyses for TWEB and mass weather dissemination services accessed by telephone are included in this report. Details of these analyses are included in a second volume. Finally, the report provides a set of conclusions and recommendations that may be acted upon at low cost to improve short-term operational effectiveness, regardless of long-range systematic decisions. No large facilities and equipment (F&E) expenditures are recommended until completion of an overall TWEB system design. It is also recommended that near-term programming should include funding to carry out investigatory work in exploring concepts for modernizing the TWEB system through redesign. (Author)

AN (1) AD-A089 138/XAG

FG (2) 010600

120500

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250400

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Automated Flight Plan Filing by Simulated Voice Recognition.

DN (9) Interim rept. Aug 75-May 78

AU (10) Shochet, Ephraim
Lemanski, Richard

RD (11) Aug 1980

PG (12) 37 Pages

RS (14) FAA-CT-80-15

RN (18) FAA-RD-80-56

RC (20) Unclassified report

DE (23) *Speech recognition, *Man computer interface
Civil aviation, Simulation, Routing, Flight paths, Planning, Pilots,
Automation, Telephone systems, Word recognition, Recording systems,
Computer files, Human factors engineering

ID (25) Flight plans, URD(Utterance Recognition Device), LPN-FAA-131-401-835

AB (27) The Systems Research and Development Service (SRDS) asked the Federal Aviation Administration (FAA) Technical Center to develop and

demonstrate the capability of automatic flight plan filing by computerized word recognition. To accomplish a prototype capability, it was necessary to begin gathering human factors data to help determine the correct technical approach and design concept. The tests reported herein centered on two questions: Would pilots use this method of flight plan entry? Which of the three protocols simulated do pilots prefer most? Because of the limitations inherent in this experiment, the answers to these questions are tentative at this time. Given the assumption that the actual utterance recognition device (URD) performs at a level comparable to the simulation used in this experiment, it is entirely reasonable to conclude that general aviation pilots would (1) elect to file flight plans by computerized word recognition using a real computer and (2) prefer 'no prompt' or a 'word echo-back prompt' over the 'cue-tone prompt.' The results show that the preferred protocol was the 'no prompt' method. (Author)

AN (1) AD-A089 914/XAG

FG (2) 140300

170703

170900

230200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Proceedings of the 1979 Seminar on Air Traffic Control. Terminal Radar Approach Control (TRACON) Facility Supervisory Desk Complex.

DN (9) Rept. for Nov 79-Feb 80

AU (10) Zito, Paul
Hierbaum, Felix E.
Massimino, Michael
Goodwin, John
Zurinkas, Tom

RD (11) Aug 1980

PG (12) 106 Pages

RS (14) FAA-CT-80-170

RN (18) FAA-RD-80-105

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Workplace layout, *Control panels,
*Radar equipment, *Recording systems
Systems engineering, Civil aviation, Consoles, Facilities

ID (25) TRACON(Terminal Radar Approach Control), Radar displays, Voice recordings, Facility supervisory desks, Desks, LPN-FAA-219-151-140

AB (27) With the planned construction of new control tower and TRACON facilities, the Federal Aviation Administration (FAA) has established a

need for standardized supervisory desk complexes. The air traffic control (ATC) systems Applications Branch (ACT-210) at the Federal Aviation Administration (FAA) Technical Center conducted a study of selected field facilities. In addition, a seminar was held at the Technical Center which resulted in recommending several different supervisor's desk designs for future implementation at new facilities or as useful, functional, and efficient replacements for existing TRACON installations. (Author)

AN (1) AD-A089 996/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) New Terminal Radar Approach Control in Tower CAB (TRACAB) Concept for Love Field, Dallas, Texas.

DN (9) Final rept. Mar-May 80

AU (10) Bottomley, Donald
Ezekiel, Edward G.
Zurinskas, Thomas E.

RD (11) Aug 1980

PG (12) 17 Pages

RS (14) FAA-CT-80-40

RN (18) FAA-RD-80-79

RC (20) Unclassified report

DE (23) *Consoles

Texas, Airport control towers, Air traffic control systems, Electronic equipment, Housings, Modular construction, Models

ID (25) *TRACAB(Terminal Radar Approach Control in Tower Cab), Love Field, LPN-FAA-144-170-810

AB (27) This study was accomplished in response to a request from Air Traffic Service (AAT-100), for development of a mockup to evaluate a centrally positioned terminal radar approach control in a tower cab (TRACAB) console. Presently, the Local Control position at Love Field, Dallas, Texas, generally faces both southeast runways, with all the attendant instrumentation in front of the controller. However, when conditions dictate a northwest operation, the Local Controller must turn away to see and sequence his traffic. The work effort addressed the relocation of operational positions from their usual peripheral sites in the tower cab to a unique four-winged central console with each wing having its own instrumentation. This console housed two Local Control and two Airport Surveillance Radar (ASR) positions on one side of the console and a Ground Control position on the opposite side with identical instrumentation. These five positions were endowed with a 'flip/flop'

capability as traffic dictated. The other two positions, Clearance Delivery/Flight Data and Watch Supervisor, remained constant at each end of the console, regardless of traffic flow. While the four-winged central console solved the Local Controller's instrumentation availability, it reflected two problems. Limited room on the console caused overcrowding and the resultant overheating of the operational equipment. Local Control perambulation was restricted due to the two ASR controllers and tower peripheral boundaries. Since few airports require the 'flip/flop' design necessary by a tower located between dual runways, it was concluded that no further evaluation of this console concept would be made.

AN (1) AD-A090 111/XAG

FG (2) 040200
170900

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Test and Evaluation of the Airport Surveillance Radar (ASR)-8 Wind Shear Detection System (Phase II). Revision.

DN (9) Interim rept. Apr-Dec 79

AU (10) Offi, D. L.
Lewis, W.

Lee, T.

DeLaMarche, A.

RD (11) Aug 1980

PG (12) 40 Pages

RS (14) FAA-CT-80-17-A

RN (18) FAA-RD-80-21-A

RC (20) Unclassified report

NO (21) Supersedes report dated May 80, AD-A086 045. See also Rept. no. FAA-NA-78-59-LR.

DE (23) *Meteorological radar, *Wind shear, *Search radar, *Doppler radar Radar antennas, Fast fourier transforms, Flight paths, Airport control towers, Accuracy, Runways, Airborne, Airport radar systems, Prototypes, Flow charting, Test and evaluation, Graphs, Tables(Data)

ID (25) *Wind shear radar, ASR(Airborne Surveillance Radar)

AB (27) A wind shear detection system developed by the Wave Propagation Laboratory (WPL) to operate with the Federal Aviation Administration (FAA) Airport Surveillance Radar (ASR)-8 was installed and is being tested at the FAA technical Center. Initial efforts, previously reported in Report NA-78-59-LR, were directed toward hardware and software shakedown and feasibility determination. Second phase tests compared radar with aircraft and tower winds, evaluated the wind shear

measurement capability under various weather conditions, and investigated the effectiveness of a simple two-azimuth pointing strategy and system capabilities and limitations. Results showed the system to be compatible with and to operate satisfactorily with the ASR-8. The processing and spectral display of clear air and precipitation returns is feasible. The accuracy of agreement between radar-measured winds and components of the aircraft-measured winds in both radially oriented flights and runway offset flights, using a two-azimuth pointing technique, was examined. Radar versus tower wind agreement was also examined. Potentially dangerous wind shears associated with weather during these tests were detectable. Certain system limitations also have been defined and considered. It is recommended that tests continue to complete definition of and demonstrate capabilities in all weather situations, to optimize performance, and to provide information to specify system design for possible development of a prototype model. (Author)

AN (1) AD-A091 510/XAG

**FG (2) 050900
061500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Effects of Tobacco on Aviation Safety

**AU (10) Dille, J. R.
Linder, M. K.**

RD (11) Aug 1980

PG (12) 11 Pages

RS (14) FAA-AM-80-11

RN (18) XH-FAA-AM

RC (20) Unclassified report

AL (22) Approved for public release; distribution unlimited.

DE (23) *PERFORMANCE(HUMAN), *PILOTS, *AVIATION SAFETY, *NICOTINE PSYCHOMOTOR FUNCTION, AVIATION ACCIDENTS, CARBON MONOXIDE, HEMOGLOBIN,

CARDIOVASCULAR SYSTEM, TOXICOLOGY, ACCIDENT INVESTIGATIONS

ID (25) SMOKING, WITHDRAWAL SYMPTOMS

AB (27) In 1976, the FAA was petitioned to issue regulations that would prohibit all smoking in the cockpit during commercial flight operations and prohibit preflight smoking by flight crew members within 8 hours before commercial flight operations. A review of the literature was conducted to determine the effects on pilot performance of carbon monoxide (CO), nicotine, and smoking withdrawal. The literature is

confusing because it frequently contains the results of studies using nonsmokers, CO only, estimated carboxyhemoglobin (COHb) levels, small and poorly ventilated chambers, and discrimination tasks were spare capacity is not a factor. Some frequently quoted results cannot be duplicated. Significant changes in psychomotor and cardiovascular performance with COHb levels less than 10 percent are doubtful. The records of 2,660 fatal general aviation aircraft accidents that occurred in 1973 through 1976 have been examined. Toxicology reports are contained in 1,559 records, and 225 without fire had COHb levels greater than 1 percent. Smoking was not identified as a casual factor but may have contributed to the cause of some of these accidents. However, the compound factors that were often found and the dire consequences are far less likely to occur in air commerce operations. For some, withdrawal symptoms may occur and more than offset any benefits to aviation safety that are claimed for a ban on preflight and in-flight smoking. (Author)

AN (1) AD-A127 452/XAG

**FG (2) 120500
170900**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Software System - Probability of Detection for ARTS (Automated Radar Terminal System) III

AU (10) Pagano, T.

RD (11) Aug 1980

PG (12) 11 Pages

RS (14) FAA-CT-80-27

RC (20) Unclassified report

DE (23) *Computer programs, *Target detection, *Hit probabilities

Operational effectiveness, Computations, Radar scanning, Terminals, Losses

ID (25) PDP 11/20 computers, ARTS(Automated Radar Terminal System)

AN (1) AD-A087 235/XAG

**FG (2) 050900
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Analysis of Flight Service Station Consolidation. Phase III:

Indianapolis, Fort Wayne, and Terre Haute Flight Service Stations.

DN (9) Final rept. Aug-Sep 77

AU (10) Paul, Lee
Shochet, Ephraim
Talotta, James D.
RD (11) Jul 1980
PG (12) 58 Pages
RS (14) FAA-CT-80-7
RN (18) FAA-RD-80-57
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Work measurement
Stations, Geographical distribution, Modification, Operational
effectiveness, Personnel, Performance(Human), Computerized simulation,
Queueing theory, Data acquisition
ID (25) *Flight service stations, *Consolidation, Transactions
AB (27) A study was made to evaluate the effect of consolidating the
Indianapolis, Terre Haute, and Fort Wayne Flight Service Stations (FSS)
into one facility. This report documents the estimated effect of
consolidation on specialist productivity, distribution of workload,
staffing requirements, and service to the user. Queueing theory was used
to determine what one might expect in the way of number of delays,
amount of delay, number waiting, etc. In addition, analyses were made
to estimate the effect of decreasing the number of specialists while
assuming the same demand and increasing the demand while assuming the
same number of specialists. The data collected clearly supports the
expected value of consolidation and must be regarded as an encouraging
indication that the present system can be made to operate more
efficiently and provide better service to the users. Providing the
users access to a larger number of specialists than are normally
available at the nearest FSS should permit better service with fewer
delays and a more equitable distribution of the workload, other things
being equal. (Author)

AN (1) AD-A087 606/XAG
FG (2) 170700
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) System Description for the Airborne-Omega Data Bank
AU (10) Rzonca, Lorraine
RD (11) Jul 1980
PG (12) 34 Pages
RS (14) FAA-CT-80-191
RN (18) FAA-RD-80-84
RC (20) Unclassified report
DE (23) *OMEGA NAVIGATION, *DATA BASES

ANOMALIES, IONOSPHERIC DISTURBANCES, FORMATS, DATA PROCESSING
ID (25) Data banks, LPN-FAA-043-311-520
AB (27) The Airborne-Omega Data Bank has been established at the Federal
Aviation Administration (FAA) Technical Center. Its main objective is
to provide a centralized repository for operational airborne-Omega data
so that performance which is representative of the majority of
production airborne-Omega navigation equipments under various
ionospheric conditions (including high solar activity) may be
evaluated. Details of the methods developed for data collection,
processing, and reporting are documented in this report. Current status
and plans for the near future are discussed. (Author)

AN (1) AD-A088 204/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Initial Data Bank Report (Fall 1978; Winter/Spring/Summer/Fall 1979; Winter 1980).
DN (9) Data rept. 1978-1980
AU (10) Rzonca, Lorraine I.
RD (11) Jul 1980
PG (12) 22 Pages
RS (14) FAA-CT-80-189
RN (18) FAA-RD-80-83
RC (20) Unclassified report
DE (23) *OMEGA NAVIGATION, *DATA BASES
CIVIL AVIATION, SEASONAL VARIATIONS, SPATIAL DISTRIBUTION, SIGNAL TO
NOISE RATIO, VERY LOW FREQUENCY, POLAR CAP ABSORPTION, SOLAR
ACTIVITY
ID (25) Data banks, LPN-FAA-043-311-520
AB (27) The International Bank for airborne-Omega data has begun operation at
the Federal Aviation Administration (FAA) Technical Center. This first
report issued by the Data Bank is based upon preliminary data for
Pacific flights in fall 1978 and winter/spring 1979 and upon data from
North Atlantic flights in summer/fall 1979 and winter 1980. At least
three Omega stations were received during all phases of these flights.
No significant seasonal variations or effects due to solar activity
were noted in the signal-to-noise values. These values were highly
repeatable (under the same conditions) with major drops due to ice cap
attenuation and operation in areas of normally high very low frequency
(VLF) noise. Differences in signal-to-noise between signals traversing
daylight/night ice cap (for both Greenland and Antarctica) were noted.
(Author)

AN (1) AD-A088 415/XAG

FG (2) 040200
250300

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) The Effect of the Western Union Weather Data System on the Preflight
Briefing Position at the Chicago Flight Service Station.

DN (9) Final rept. Aug 75-May 78

AU (10) Shochet, Ephraim
Talotta, James D.
Holladay, Robert P.

RD (11) Jul 1980

PG (12) 29 Pages

RS (14) FAA-CT-79-55

RN (18) FAA-RD-80-23

RC (20) Unclassified report

DE (23) *Terminal flight facilities, *Weather communications

Air traffic controllers, Advisory activities, Meteorological data, Data
transmission systems, Display systems, Operational effectiveness, Job
analysis, Work, Attitudes (Psychology), Surveys

ID (25) *Flight service stations, Preflight briefing, LPN-FAA-131-402-824

AB (27) An experiment utilizing a 'before/after' research design was conducted
to determine the effect of the Western Union Weather Data System (WDS)
on the preflight briefing position at the Chicago, Illinois, Flight
Service Station (FSS). Specialist activity was recorded by making
written annotations on a moving paper chart called a kymograph. The
average length of time spent in each activity prior to the installation
of automated equipment was compared to the time spent in the same
activity after automation. In addition, a questionnaire survey and
personal interviews with specialists were conducted in the 'after'
period. The data obtained from the specialist opinion survey indicate
that the WDS improved the quality of flight information service to the
user pilot and improved job satisfaction for the specialist. The
objective data was congruent with and in the same direction as the data
that was obtained from the specialist opinion survey. However, the
specialists perceived a greater reduction in workload than was measured
in the before and after comparison of preflight briefing times.
(Author)

AN (1) AD-A089 971/XAG

FG (2) 050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION

SAFETY

TI (6) Summary of Federal Aviation Administration Responses to National
Transportation Safety Board Safety Recommendations.

DN (9) Quarterly rept. Apr-Jun 80

AU (10) Harrison, J. R.

RD (11) Jul 1980

PG (12) 168 Pages

RS (14) FAA-ASF-80-2

RC (20) Unclassified report

DE (23) *Aviation safety, *National transportation system, *Periodicals,
*Federal Law

Decision making, Response, Aviation accidents, Accident investigations,
Airworthiness, Inspection, Aircraft, Performance (Engineering),
Preventive maintenance, Failure, Aviation injuries, Air traffic control
systems

ID (25) Federal Aviation Administration, National Transportation Safety Board

AB (27) This report contains NTSB recommendations and all FAA responses to
Board recommendations that were delivered to the Board during the
applicable quarter. In addition, the report includes NTSB requests and
FAA responses concerning reconsiderations, status reports, and followup
actions. The Table of Contents for this report reflects only those NTSB
recommendations which are still open pending FAA action (i.e., those
that have not been designated as 'Closed' by the NTSB as a result of
acceptable action). Accordingly, the Table of Contents may reflect a
number of multiple recommendations (example: A-80-5 through 7), but
background material is included only for those recommendations which
remain in an 'Open' status. Background information for those
recommendations which have been closed is available in FAA headquarters
files. (Author)

AN (1) AD-A089 977/XAG

FG (2) 120600
120700

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
SYSTEMS

ENGINEERING MANAGEMENT

TI (6) ATARS Implementation Tradeoff Study

AU (10) Sittler, Robert W.

Seiler, Karl, III

RD (11) Jul 1980

PG (12) 108 Pages

RS (14) FAA-EM-80-10
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Aviation safety, *Early warning systems, *Cost analysis
Trade off analyses, Data processing, Multiprocessors, Vulnerability, Maintainability, Discrete address beacon systems, Architecture, Reliability, Radar beacons, Growth(General), Real time, Computer communications, Flow charting
ID (25) ATARS(Automated Traffic Advisories and Resolution Service), Distributed data processing
AB (27) The study is a comparative analysis of the costs and benefits from competing distributed and centralized ATARS architectures. The current DABS/ATARS structure is a distributed one; a new architecture is postulated for deployment as a centralized ATARS system. Distributed and centralized ATARS are compared as to performance, cost, reliability, maintainability, vulnerability and growth potential. Performance and reliability are treated as constraints to be met equally by all architectures. Maintainability is included in cost. The cost analysis including cost sensitivities forms the bulk of the study. It is found that centralization of most sites is more costly than a distributed deployment and that the individual sites which contribute most to a cost advantage for centralization lie in high density terminal areas. A most significant finding is that centralized ATARS is inferior to distributed ATARS in vulnerability. The options are about equal in growth potential. (Author)

AN (1) AD-A090 726/XAG
FG (2) 010500
050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC AIRPORTS SERVICE
TI (6) Airport Crash/Fire/Rescue (CFR) Service Cost and Benefit Analysis. Volume I. Text.
RD (11) Jul 1980
PG (12) 141 Pages
RS (14) FAA-AS-80-2-VOL-1
RC (20) Unclassified report
DE (23) *Airports, *Aviation safety
Aviation safety, Crashes, Fire protection, Rescues, Costs, Benefits, Cost analysis
ID (25) CFR(Crash Fire Rescue)
AB (27) Primarily to improve the chances of human survival in the event of an aircraft accident at an airport, airport authorities throughout the

country maintain a crash/fire/rescue (CFR) service. Such a service has, in fact, since 1972 been required of certain airports under Federal Aviation Regulation Part 139, Certification and Operations: Land Airports Serving CAB-Certificated Air Carriers. To assist the Federal Aviation Administration in its evaluation of airport safety programs, HH Aerospace Design Company, Inc., has prepared an analysis of the costs and benefits of CFR services at all public use airports throughout the country. This analysis does not attempt to assess the impact of Part 139 requirement on aviation safety, but simply presents the data required by the FAA to consider future policy regarding CFR in the presence of an everchanging aviation environment.

AN (1) AD-A091 155/XAG
FG (2) 010500
131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC AIRPORTS SERVICE
TI (6) Airport Crash/Fire/Rescue (CFR) Service Cost and Benefit Analysis. Volume II. Appendixes.
RD (11) Jul 1980
PG (12) 267 Pages
RS (14) FAA-AS-80-2-VOL-2
RC (20) Unclassified report
NO (21) See also Volume 1, AD-A090 726.
DE (23) *Firefighting vehicles, *Aviation accidents
Airports, Aircraft fires, Crashes, Fire fighting, History, Statistical data, Tables(Data)
AB (27) Contents: National CFR Equipment Inventory; The 221 AIR Carrier Accidents with Potential CFR Benefits Selected in Pass One; The 129 AIR Carrier Accidents that Pass Two Determined to Provide No CFR Benefits; A List of The 61 Air Carrier Accidents Studied in Detail in Pass Three for Which NTSB Records were Available; The 31 Air Carrier Accidents for Which Detailed NTSB were Unavailable; Description of The 61 Air Carrier Accidents Studied in Detail in Pass Three for Which NTSB Records were Available; and Estimates of CRF Crash Benefits for Air Carrier Accident, 1966-1978.

AN (1) AD-A092 528/XAG
FG (2) 230200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Considerations Relative to the Use of Canes by Blind Travelers in Air Carrier Aircraft Cabins

AU (10) Chandler, R. F.

Garner, J. D.

Lowrey, D. L.

Blethrow, J. G.

Anderson, J. A.

RD (11) Jul 1980

PG (12) 32 Pages

RS (14) FAA-AM-80-12

RC (20) Unclassified report

DE (23) *Medical equipment

Passengers, Passenger aircraft, Aircraft cabins, Evacuation, Time, Emergencies

ID (25) *Canes, Blind travelers

AB (27) Results are presented of specific areas of study; i.e.: (1) passenger evacuation time lapses with and without the presence of canes; (2) emergency exiting advantages and disadvantages with and without the presence of canes; (3) the utility of surrogate canes of the folding and telescoping varieties; (4) the movement of an unsecured cane during a high g deceleration; (5) the utility of a cane inside an aircraft during an emergency evacuation; and (6) implications of a passenger carrying a cane while descending an evacuation chute. The test program described involved evacuation tests from the Civil Aeromedical Institute (CAMI) evacuation simulation test facility, crash simulation tests conducted on the CAMI track, and static loading of different cane types to the failure point. (Author)

AN (1) AD-A092 529/XAG

FG (2) 050800

140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Readability of Self-Illuminated Signs Obscured by Black Fuel-Fire Smoke

AU (10) Rasmussen, P. G.

Chesterfield, B. P.

Lowrey, D. L.

RD (11) Jul 1980

PG (12) 15 Pages

RS (14) FAA-AM-80-13

RC (20) Unclassified report

DE (23) *Aviation safety, *Exits, *Visual perception, *Obscuration, *Smoke,

*Test methods

Black(Color)

ID (25) Black fuel-fire smoke, Signs

AB (27) This study, using black fuel-fire generated smoke, is a partial replication of an earlier study using an inert white smoke as the obscuring agent in the study of the readability of smoke-obscured, self-illuminated emergency exit signs. The results indicate that, within the range of sign sizes and background luminance levels studied, and under otherwise favorable viewing conditions, most of the signs were read through black smoke with optical densities ranging between 3.0 and 4.0. At two standard deviations below the means, most of the size and luminance level combinations were identified at optical densities ranging from approximately 2.5 to 3.0. A comparison of the results with those obtained in the earlier study using white smoke, shows both colors of smoke to be approximately equal in their ability to shroud the illuminated signs. Black smoke, however, appears somewhat more effective in obscuring small details at or near the normal visual acuity threshold. (Author)

AN (1) AD-A099 968/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Miami International Airport Data Package Number 7. Airport Improvement Task Force Delay Studies.

RD (11) Jul 1980

PG (12) 155 Pages

RC (20) Unclassified report

NO (21) See also AD-A099 962.

DE (23) *Airports

Ground traffic, Aircraft landings, Takeoff, Delay, Runways, Taxiways, Utilization, Statistical analysis

ID (25) *Miami International Airport

AB (27) This data package presents the key results of the Miami Stage 1 Airfield Simulation Model experiments, organized by comparison sets which demonstrate the relationship between various demand/improvement/ATC system scenario combinations that exist in the experimental design. The annual delay estimates for various demand/improvement/ATC System scenario combinations are also included in this package. These estimates were developed from an analysis of the Airfield Simulation Model experiments, as opposed to employing the Annual Delay Model as originally envisioned. The annual weather group/demand factor ratios were applied to the simulation results of

selected experiments to develop the annual delay estimates. The major intent of this data package is to compare the experimental results and annual delay estimates in a manner that will assist the Miami Delay Studies Task Force in preparing its final report.

AN (1) AD-A100 691/XAG

**FG (2) 130200
140200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Helicopter Noise Exposure Level Data: Variations with Test Target. Indicated Airspeed, Distance, Main Rotor RPM and Takeoff Power

AU (10) Newman, J. Steven

RD (11) 10 Jul 1980

PG (12) 37 Pages

RS (14) FAA-AEE-80-34

RC (20) Unclassified report

DE (23) *HELICOPTERS, *AIRCRAFT NOISE, *AIRCRAFT ENGINE NOISE, *MEASUREMENT

TAKEOFF, APPROACH, FLIGHT PATHS, NOISE POLLUTION, METEOROLOGY

ID (25) S-76 aircraft, A-109 aircraft, UH-60A aircraft

AB (27) This report provides uncorrected noise exposure level data measured using an integrating sound level meter at a single measurement location during the recently completed, week long, FAA helicopter noise test. In addition to the measurements reported, primary acoustical measurements were conducted. This acoustical data (acquired for nine microphones) will be combined with flight path track data processed at the FAA, Dulles Noise Laboratory by D. W. Ford. Meteorological data acquired from surface readings and radiosondes will be processed by U.S. Weather Service personnel.

AN (1) AD-A103 802/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK FLIGHT STANDARDS NATIONAL FIELD OFFICE

TI (6) Current Aircraft Survey (Approach Speeds, Gross Weights, and Dimension).

DN (9) Memorandum rept.

AU (10) Parr, Frank

RD (11) Jul 1980

PG (12) 35 Pages

RS (14) FAA-AFO-500-20

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS, *APPROACH VELOCITY, WEIGHT, SIZES(DIMENSIONS), REGULATIONS, AIRCRAFT, CLASSIFICATION, TABLES(DATA)

ID (25) Landing speed, Gross weight

AB (27) A survey of current aircraft was conducted to determine the effect of a revision to FAR 97.3. The revision deleted the use of gross weight in categorization of aircraft for instrument approach minimums. Of 237 aircraft types and models of 22 nations surveyed, 180 were not affected by the rule change. Of the affected aircraft, 31 changed from Category D to C, one from D to B, one from D to A, 17 from C to B, three from C to A, and four from B to A. Ten aircraft types have series which fall into two categories. (Author)

AN (1) AD-A086 118/XAG

**FG (2) 050100
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) A Method for Administrative Assignment of Runway Slots.

DN (9) Final rept.

AU (10) Geisinger, Kenneth E.

RD (11) Jun 1980

PG (12) 53 Pages

RS (14) FAA-AVP-80-5

RC (20) Unclassified report

DE (23) *Runways, *Allocations

Air traffic control systems, Air transportation, Corporations, Transport aircraft, Aircraft landings, Takeoff, Scheduling, Management

AB (27) Federal Aviation Regulations set quotas (upper limits) on the number of operations per hour at each four major U.S. air carrier airports: Washington National, New York LaGuardia, Chicago O'Hare International and New York Kennedy International. The reservation for one of these operations is referred to as a 'runway slot'. The runway slots designated for scheduled air carriers are periodically assigned to the various carriers in advance and airline schedules are built around them. How many slots each airline gets is determined by mutual agreement among the airlines through airline scheduling committees. These committees might be abolished and their function might have to be performed by the Federal Aviation Administration (FAA). This report presents a method for administratively assigning slots to the airlines.

It is based on observations made of the scheduling committees. The major difference is that in the scheduling committees, decisions are made in order to get unanimous consent; in the administrative procedure, decisions are made to maximize a measure of passenger service. (Author)

AN (1) AD-A086 963/XAG

FG (2) 170703

250200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Study of 25 KHz Channel Spacing Implementation in the VHF Air Traffic Control Communications Band for Low Altitude En Route and Terminal Facilities.

DN (9) Final rept.

AU (10) Cram, Charles W.

RD (11) Jun 1980

PG (12) 33 Pages

RS (14) FAA-RD-80-32

RC (20) Unclassified report

DE (23) *Communication and radio systems, *Air traffic control systems, *Frequency allocation

Planning, Long range(Time), Air traffic control terminal areas, Radio interference, Very high frequency

AB (27) The FAA Spectrum Management Branch is responsible for making long range plans for the use of frequencies in the VHF air traffic control communications band (118 - 136 MHz). In February 1972 the decision was made to split channels in this band from 50 kHz to 25 kHz channel spacing. Plans were initially made to implement reduced channel spacing only in the high altitude en route sectors. The first of these assignments was made in June 1977. The purpose of the studies contained in this report was to form the basis of an implementation schedule for low altitude en route and terminal facilities. The effects of the newly proposed Terminal Control Areas as well as the effects of the expected growth in the number of new frequency assignments were studied and results indicated that 25 kHz channel spacing should be implemented in low altitude en route and terminal sectors in 1982 and 1984 respectively. (Author)

AN (1) AD-A087 655/XAG

FG (2) 050600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) The Selection of Air Traffic Control Specialists: I. History and Review of Contributions by the Civil Aeromedical Institute

AU (10) Boone, James O.

Collins, William E.

VanDeventer, Allan D.

RD (11) Jun 1980

PG (12) 58 Pages

RN (18) FAA-AM-80-7-1

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Personnel selection

Standards, Aptitude tests, Performance(Human), Statistical distributions, Government employees, Specialists, Training, Attrition, Males, Females

ID (25) Federal Aviation Administration, Academic success, Age distribution, LPN-FAA-AM-C-80-PSY-74

AB (27) For two decades the FAA Civil Aeromedical Institute (CAMI) has engaged in active research programs exploring most aspects of the problems of effectively selecting air traffic control specialists (ATCSs) for the FAA. The results of those efforts have contributed directly to the establishment of revised ATCS selection standards by the Civil Service Commission (CSC). Early studies on the validity of aptitude tests for predicting successful completion of Academy training led to a decision to use such tests for part of the CSC screening standard. Later studies led to the establishment of a maximum age standard of 30 years for entry into ATCS training. In addition, CAMI researchers have continuously evaluated the validity of existing standards, have examined numerous variables and alternative aptitude measures, and have provided a number of data-based recommendations in an effort to upgrade the effectiveness of predicting success in ATCS training. This paper reviews that research with emphasis on aptitude screening measures, attrition, age, prior experience, education, sex, military ATCS training, and the Uniform Guidelines on Employee Selection. (Author)

AN (1) AD-A088 150/XAG

FG (2) 010301

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Helicopter Terminal Instrument Procedures (TERPS) Development Program.

DN (9) Final rept.

RD (11) Jun 1980
PG (12) 78 Pages
RS (14) FAA-RD-80-59
RC (20) Unclassified report
DE (23) *HELICOPTERS, *AIR TRAFFIC CONTROL SYSTEMS, *INSTRUMENT FLIGHT
TERMINAL FLIGHT FACILITIES, STANDARDS, INPUT, MANAGEMENT PLANNING
AND
CONTROL

ID (25) TERPS(Terminal Enroute Instrument Procedures)
AB (27) The Helicopter TERPS Development Program is designed to collate and coordinate all inputs received from government-sponsored and other projects which relate to helicopter TERPS in order to: assure that data generated by each project is developed, coordinated and applied in such a way as to avoid duplication of effort while achieving results in minimum time. It describes a development program whose objective is to develop criteria which will maximize the efficiency of terminal area and enroute operations with helicopters, by applying the unique maneuver-performance of helicopters. It includes both a near-term and long-term review of TERPS, both of which are expected to generate modification of the U.S. Standard for Terminal and Enroute Instrument Procedures and the criteria and procedures contained therein. The FAA, other Federal Government agencies, and organizations participating in this effort are identified. Program management responsibilities are addressed and a program schedule with milestones is presented. (Author)

AN (1) AD-A088 155/XAG
FG (2) 010200
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
SYSTEMS

ENGINEERING M ANAGEMENT

TI (6) The Effect of Whisper/Shout on Active BCAS Performance
AU (10) Koenke, Edmund J.
Boczenowski, Sandra

RD (11) Jun 1980
PG (12) 116 Pages
RS (14) FAA-EM-80-5
RC (20) Unclassified report
DE (23) *COLLISION AVOIDANCE, *AVIATION SAFETY
THREATS, TARGET ACQUISITION, INTERROGATION,
SYNCHRONIZATION(ELECTRONICS), SENSITIVITY, AIR TRAFFIC CONTROL
TERMINAL
AREAS, PROBABILITY, COMPUTER PROGRAMS, DATA REDUCTION, GRAPHS

ID (25) *Beacon collision avoidance systems, Monte Carlo method
AB (27) When BCAS is operating in a high density environment the presence of synchronous garble will interfere with target detection. This report presents a simulation tool used to analyze the BCAS operation in a garble environment with several design variations. The chief BCAS enhancement evaluated was the technique known as whisper/shout. This technique can effectively reduce the garble problem when a BCAS aircraft operates in terminal airspace. In addition, the effectiveness of degarble capabilities is demonstrated in various airspace densities. A low cost general aviation CAS is evaluated with the same model and performs well in terminal airspace. It is concluded that in order to satisfy the draft U.S. National Aviation Standard for BCAS that a system must use full degarbling, whisper/shout and at least a 1-second update rate. (Author)

AN (1) AD-A089 431/XAG
FG (2) 010200
131200

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Engineering and Development Program Plan Aircraft Crashworthiness
AU (10) Caiafa, Caesar A.
Neri, Lawrence M.

RD (11) Jun 1980
PG (12) 54 Pages
RS (14) FAA-CT-80-166
RN (18) FAA-ED-18-6
RC (20) Unclassified report
DE (23) *AVIATION SAFETY, *AVIATION ACCIDENTS, *CRASHES,
*SURVIVAL(GENERAL)
AIRFRAMES, AIRCRAFT CABINS, FUEL SYSTEMS, ESCAPE SYSTEMS,
STANDARDS,
FIXED WING AIRCRAFT, ROTARY WING AIRCRAFT

ID (25) Crashworthiness, LPN-FAA-182-520-100
AB (27) The Aircraft Crashworthiness Program Plan is designed to reduce or prevent aircraft occupants from incurring serious or fatal injuries in a 'survivable' crash impact accident by incorporating crashworthy design features into the initial stages of fixed-wing and rotary-wing aircraft development. It describes a 5-year development program for both airplanes and rotorcraft. It identifies five major subprogram areas for study and analysis to accomplish the program's goals: (1) Airframes; (2) Cabin safety; (3) Fuel system protection; (4) Emergency evacuation system; and (5) Standards, criteria, and procedures. The

plan emphasizes use of available background data; development of analytical techniques; validation of analytical techniques; validation of data to determine feasibility/acceptability; and transmittal of appropriate data for consideration as the basis for regulation, standards, etc. The Federal Aviation Administration groups, other Government agencies/departments and industry organizations participating in this effort are identified. Program schedule with milestones is presented. Program management and funding requirements are also identified.

AN (1) AD-A091 651/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Regulatory Analysis: Allocation of IFR Reservations at Washington National Airport.

DN (9) Final rept.

AU (10) Rodgers, John M.
Geisinger, Kenneth E.
DeCarme, David G.

RD (11) 06 Jun 1980

PG (12) 99 Pages

RS (14) FAA-AVP-80-6

RC (20) Unclassified report

DE (23) *Air traffic, *Allocations

Airports, District of Columbia, Virginia, Instrument flight, Aircraft landings, Takeoff, Runways, Access, Scheduling, Regulations, Bargaining, Impact, Civil aviation, Commercial aviation, Economics, Management

ID (25) Airlines, Auctions

AB (27) IFR reservations at Washington National Airport (DCA) are presently awarded to individual air carriers and commuters by means of separate scheduling committees. Runway access is determined by unanimous agreement of carriers authorized to serve the airport. The subject report analyzes the economic impacts of two alternative methods--a slot exchange auction and an administrative procedure--for allocating DCA IFR reservations to users. Anticipated auction results and a sample administrative allocation are presented. Passenger, airline, and general economic impacts are discussed and estimates are provided of airport costs and revenues associated with each procedure. The analysis was prepared as supporting material for a Notice of Proposed Rulemaking on the allocation of IFR reservations at DCA. (Author)

AN (1) AD-A092 016/XAG

FG (2) 010301

010305

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee. Volume I.

DN (9) Final rept. 26 Jun 78-26 Jun 80

AU (10) Enders, J. H.
Wood, E. C.

RD (11) 26 Jun 1980

PG (12) 86 Pages

RS (14) FAA-ASF-80-4-VOL-1

RC (20) Unclassified report

DE (23) *Aircraft fires, *Fire safety, *Aeronautics, *Advisory activities
Panel(Committee), Guidance, Crashes, Environments, Fires, Rotary wing aircraft, Explosions, Transport, Reasoning, Reduction

ID (25) Transport aircraft, SAFER(Special Aviation Fire and Explosion Reduction)

AB (27) The Special Aviation Fire and Explosion Reduction (SAFER) Advisory

Committee and its technical supporting groups spent nearly 13 months from May 1979 through June 1980 examining the factors affecting the ability of the aircraft cabin occupant to survive in the post-crash fire environment and the range of solutions available. Having only a limited amount of time available, the Committee confined its examination to large transport category aircraft, reasoning that recommendations developed could provide the necessary guidance for the FAA to address the broader spectrum of airplane and rotorcraft fire safety improvement. During the course of this assignment, certain topics that were outside the scope of the Committee, yet have some bearing on aircraft fire in general, were identified but not discussed by the Committee. Some of these topics were felt to be worthy of further examination by the FAA or by some other body of advisors constituted for that purpose. These topics are not addressed in this report. Presentations were made to the SAFER Committee by Committee members, technical supporting groups, the FAA, citizens and private firms. The broadly-constituted body of information developed and presented to the Committee formed the basis for Committee Findings and Recommendations. The Committee focused its recommendations on solutions or interim improvements. (Author)

AN (1) AD-A099 147/XAG

FG (2) 131200
230600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee. Volume IIA.

DN (9) Final rept. 26 Jun 78-26 Jun 80

AU (10) Enders, J. H.
Wood, E. C.

RD (11) 26 Jun 1980

PG (12) 310 Pages

RS (14) FAA-ASF-80-4-VOL-2A

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A092 016.

DE (23) *Aviation safety, *Fire hazards, *Aircraft fires

Crashes, Aircraft equipment, Flammability, Explosions, Hazards, Reduction, Escape systems, Aircraft cabins, Toxic hazards, Fire safety, Fuel tanks, Crash resistance, Fire suppression, Commercial aircraft, Jet transport aircraft, Passengers, Flight crews, Survival(Personnel)

ID (25) SAFER(Special Aviation Fire and Explosion Reduction), Postcrash safety, Antimisting fuels

AB (27) The Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee and its technical supporting groups spent nearly 13 months from May 1979 through June 1980 examining the factors affecting the ability of the aircraft cabin occupant to survive in the post-crash fire environment and the range of solutions available. Presentations were made to the SAFER Committee by Committee members, technical supporting groups, the FAA, citizens and private firms. The broadly-constituted body of information developed and presented to the Committee formed the basis for Committee Findings and Recommendations. This volume contains technical subcommittee submittal related to interior cabin material's flammability, short term, solutions to the fire hazard and recommendations on Post Crash Fire Reduction. (Author)

AN (1) AD-A099 176/XAG

FG (2) 131200
230600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee. Volume IIB.

DN (9) Final rept. 26 Jun 78-26 Jun 80

AU (10) Enders, J. H.
Wood, E. C.

RD (11) 26 Jun 1980

PG (12) 193 Pages

RS (14) FAA-ASF-80-4-VOL-2B

RC (20) Unclassified report

NO (21) See also Volume 2A, AD-A099 147.

DE (23) *Aviation safety, *Aircraft fires

Evacuation, Escape systems, Crashes, Aircraft equipment, Flammability, Fire hazards, Reduction, Aircraft cabins, Fire safety, Inflight, Jet transport aircraft, Commercial aircraft, Passengers, Flight crews, Survival(Personnel), Explosions, Fire protection

ID (25) SAFER(Special Aviation Fire and Explosion Reduction), Postcrash safety

AB (27) The Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee and its technical supporting groups spent nearly 13 months from May 1979 through June 1980 examining the factors affecting the ability of the aircraft cabin occupant to survive in the post-crash fire environment and the range of solutions available. Presentations were made to the SAFER Committee by Committee members, technical supporting groups, the FAA, citizens and private firms. The broadly-constituted body of information developed and presented to the Committee formed the basis for Committee Findings and Recommendations. This volume contains the summary of the proceedings of the SAFER Committee, FAA's responses to the recommendations, pertinent correspondence and information on crew protection and passenger evacuation. (Author)

AN (1) AD-A099 632/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) An Analysis of the Requirements for and the Costs and Benefits of the National Microwave Landing System (MLS). Volume I

AU (10) Reddick, William C.
Horowitz, Seymour M.
Rehrig, Eugene S.

Christiana, Gilbert P.

RD (11) Jun 1980

PG (12) 357 Pages

RS (14) FAA-EM-80-7-VOL-1
RC (20) Unclassified report
NO (21) See also Volume 2, AD-A100 018.
DE (23) *Microwave landing systems, *Aircraft landings
Commercial aviation, Costs, Air transportation, User needs,
Performance(Engineering), United States, Reprints, Specifications,
Precision, Aeronautics, Standards, Guidance
AB (27) This report consist of three volumes, ie:(1) An Executive Summary, (2)
this Volume I comprising the detailed study analysis, and (3) Volume II
which contains reprints of important studies supporting the analysis
included in the report. The analysis assesses the comparative
desirability of implementing the MLS equipment option in place of the
currently installed ILS as the long term National standard for
precision guidance service. An evaluation period of 20 years, to the
year 2000, was used for this assessment. An implementation strategy was
assumed to achieve the estimated National requirement 1250 ground
installations by the year 2000 and providing precision guidance
service, alternatively, with the ILS or MLS equipment option. The
study's method was to examine the technical and performance
specifications for the MLS and to estimate the dollar amounts of
benefits resulting from the portion of these specifications which could
be quantified. The dollar amounts of comparative costs to the community
of aviation users and to the FAA from the alternative use of MLS
instead of ILS were, likewise, estimated. The study results show that
implementation of MLS can provide sizeable benefits in excess of costs,
in varying degrees, to the different aviation user groups (i.e., air
carriers, commuter airlines, general aviation and the military).
(Author)

AN (1) AD-A100 018/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
SYSTEMS
ENGINEERING MANAGEMENT
TI (6) An Analysis of the Requirements for, and the Benefits and Costs of the
National Microwave Landing System (MLS). Volume II
AU (10) Reddick, William C.
Horowitz, Seymour M.
Rehrig, Eugene S.
Christiana, Gilbert P.
RD (11) Jun 1980
PG (12) 240 Pages
RS (14) FAA-EM-80-7-VOL-2

RC (20) Unclassified report
NO (21) See also Volume 1, AD-A099 632.
DE (23) *Microwave landing systems, *Aircraft landings
Costs, Commercial aviation, Air transportation, User needs,
Performance(Engineering), United States, Reprints, Precision,
Specifications, Aeronautics, Guidance, Standards
AB (27) This report consists of three volumes, 1.e.: (1) An Executive Summary,
(2) volume I comprising the detailed study analysis, and (3) this
Volume II which contains reprints of important studies supporting the
analysis included in the report. The analysis assesses the comparative
desirability of implementing the MLS equipment option in place of the
currently installed ILS as the long term National standard for
precision guidance service. An evaluation period of 20 years, to the
year 2000, was used for this assessment. The study results show that
implementation of MLS can provide sizeable benefits in excess of costs,
in varying degrees, to the aviation user group (i.e., carriers,
commuter airlines, general aviation and the military).

AN (1) AD-A100 136/XAG
FG (2) 010500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
SYSTEMS
ENGINEERING MANAGEMENT
TI (6) An Analysis of the Requirements for, and the Benefits and Costs of the
National Microwave Landing System (MLS). Executive Summary
AU (10) Reddick, William C.
Horowitz, Seymour M.
Rehrig, Eugene S.
Christiana, Gilbert P.
RD (11) Jun 1980
PG (12) 75 Pages
RS (14) FAA-EM-80-7
RC (20) Unclassified report
NO (21) See also Volume 1, AD-A099 632 and Volume 2, AD-A100 018.
DE (23) *Microwave landing systems
Cost estimates, Instrument landings, Benefits, Avionics, Ground support
equipment, Cost analysis, Economic analysis, Aircraft landings
AB (27) This report consists of three volumes, i.e.: (1) this Executive
Summary, (2) Volume I comprising the detailed study analysis, and (3)
Volume II which contains reprints of important studies supporting the
analysis included in the report. The analysis assesses the comparative
desirability of implementing the MLS equipment option in place of the

currently installed ILS as the long term National standard for precision guidance service. An evaluation period of 20 years, to the year 2000, was used for this assessment. An implementation strategy was devised to achieve the estimated National requirement for 1250 ground installations by the year 2000 and providing precision guidance service, alternatively, with the ILS or MLS equipment option. The study's method was to examine the technical and performance specifications for the MLS and to estimate the dollar amounts of benefits resulting from the portion of these specifications which could be quantified. The dollar amounts of comparative costs to the community of aviation users and to the FAA from the alternative use of MLS instead of ILS were, likewise, estimated. The study results show that implementation of MLS can provide sizeable benefits in excess of costs, in varying degrees, to the different aviation user groups (i.e., air carriers, commuter airlines, general aviation and the military). (Author)

AN (1) AD-A085 629/XAG

**FG (2) 170703
250200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Systems Research and Development Service Report of R&D Activity

**AU (10) Aronson, Nathan
Rowland, Gary R.
Scheffler, Donald L.
Dugan, James P.
Harris, Parker E., Jr**

RD (11) May 1980

PG (12) 200 Pages

RS (14) FAA-RD-80-54

RC (20) Unclassified report

**DE (23) *Air traffic control systems, *Discrete address beacon systems, *Communication and radio systems, *Navigational aids
Research management, Systems engineering, Automation, Display systems, Radar tracking, Collision avoidance, Security, Loran, Warning systems**

AB (27) The 26 technical papers contained in this document provide the details of selected topics of major research and development efforts being undertaken by the Systems Research and Development Service of the Federal Aviation Administration. Emphasis is placed on recent achievements and of expected results in the near future. Air Traffic Control Automation Division; Communications and Surveillance Division;

Navigation and Landing Division; and Systems Development Division.

AN (1) AD-A086 261/XAG

**FG (2) 010200
131200
060500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) The Current Role of Alcohol as a Factor in Civil Aircraft Accidents

AU (10) Ryan, Leonard C.

Mohler, Stanley R.

RD (11) May 1980

PG (12) 12 Pages

RS (14) FAA-AM-80-4

RC (20) Unclassified report

DE (23) *ALCOHOL CONSUMPTION

AVIATION SAFETY, AVIATION ACCIDENTS, PILOTS, STATISTICAL DATA, TOXICOLOGY

AB (27) Ethyl alcohol continues as a serious adverse factor in general aviation flight safety. According to FAA figures, the level of alcohol-associated general aviation fatal accidents has remained relatively static at a 16% general level since 1969. A recent survey of the attitudes of pilots toward alcohol and flying reveals a lack of appreciation among one-third of the pilots concerning the adverse effects of alcohol and safe flight. A renewed pilot education program on alcohol and flight safety appears indicated. (Author)

AN (1) AD-A086 595/XAG

FG (2) 050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

SAFETY

TI (6) Summary of Federal Aviation Administration Responses to National Transportation Safety Board Safety Recommendations.

DN (9) Quarterly rept. Jan-Mar 80

AU (10) Harrison, J. R.

RD (11) May 1980

PG (12) 170 Pages

RS (14) FAA-ASF-80-1

RC (20) Unclassified report

DE (23) *Aviation accidents, *Accident investigations

Reports, Response, United States government, Aviation safety, Regulations, Law enforcement

AB (27) This report presents NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'Closed' by the NTSB as a result of acceptable FAA action). Accordingly, the Table of Contents may reflect a number of multiple recommendations (example: A-79-98 through 105), but background material is included only for those recommendations which remain in an 'Open' status. Background information for those recommendations which have been closed are available in FAA headquarters files.

AN (1) AD-A087 661/XAG

FG (2) 050600
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) System Performance, Error Rates, and Training Time for Recent FAA Academy Nonradar Graduates, Community Persons, and Handicapped Persons on the Radar Training Facility Pilot Position

AU (10) Boone, James O.
Steen, Jo Ann
Van Buskirk, Linda K.

RD (11) May 1980

PG (12) 63 Pages

RS (14) FAA-AM-80-5

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Pilots, *Training devices, *Training, *Handicapped persons, *Performance(Human)
Civil aviation, Graduates, Errors, Scoring, Time, Flight simulation, Radar

ID (25) LPN-FAA-AM-C-79/80-PSY-82

AB (27) In May 1980 the Federal Aviation Administration completed construction of a Radar Training Facility (RTF) in Oklahoma City. The primary objective of the RTF is to closely duplicate the specialized operational environment existing at automated Terminal and En Route facilities as well as to have the capability of synthesizing a wide variety of air traffic control situations. Corresponding to each radar

training sector, there is a manual controller position, a ghost position, and three pilot positions. The ghost positions serve as the adjacent sectors to the radar position, while persons at the pilot positions control the flight of the aircraft simulated at the radar positions. Errors at the pilot position confound the scoring procedure for evaluating the performance of the trainee in the radar position. This study was designed to determine the expected error rates, what inputs result in the most errors, how long it takes to train pilots to proficiency, and who should/could operate the pilot positions. With respect to the latter, error rates and training time were compared for three groups; namely, air traffic control specialist trainees, community persons, and handicapped persons. The results of the study indicate that all three groups can learn to operate the pilot position within a reasonable length of time with an acceptable error rate. A recommendation is made to employ handicapped and community persons at the pilot position in order to maintain a stable, competent group of RTF pilots. (Author)

AN (1) AD-A088 889/XAG

FG (2) 040100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND
ENERGY

TI (6) Proceedings of the NATO Advanced Study Institute on Atmospheric Ozone: Its Variation and Human Influences, Aldeia das Acoteias, Algarve, Portugal, October 1-13, 1979

AU (10) Nicolet, Marcel
Aikin, Arthur C.

RD (11) May 1980

PG (12) 992 Pages

RS (14) FAA/EE-80-20

RC (20) Unclassified report

DE (23) *Atmospheres, *Ozone

Stratosphere, Symposia, Portugal, Solar radiation, Trace gases, Physiological effects, Humans, NATO, Spatial distribution, Air pollution

AB (27) This volume contains the proceedings of a North Atlantic Treaty Organization Advanced Study Institute on Atmospheric Ozone and its Human Influences. The conference was held at Aldeia das Acoteias, Portugal in October 1979. Included are papers for speakers who were invited to review the current state of knowledge for different aspects of the ozone problem. Selected short contributions of new results by other conference attendees are also given. Topics covered include solar

flux and its changes, ozone observations and the theories of spatial and temporal distribution of ozone. Natural and man made trace gases which may influence atmospheric ozone are also discussed. (Author)

- AN (1) AD-A089 111/XAG
FG (2) 130200
200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY
TI (6) Washington National Airport Flight Extension Test. Noise Monitoring Data Report.
DN (9) Final rept.
AU (10) Hare, James R., Jr.
Ford, David W.
RD (11) May 1980
PG (12) 102 Pages
RS (14) FAA/EE-80-25
RC (20) Unclassified report
DE (23) *Jet engine noise, *Airports, *Takeoff, *Commercial aircraft, *Noise pollution
Jet aircraft, Statistical analysis, Ambient noise, Level(Quantity), Monitoring, Measurement, Flight testing, South(Direction), District of Columbia, Air traffic, Air traffic control systems
ID (25) Washington National Airport, Equivalent noise levels
AB (27) This report summarizes noise measurements obtained during the Washington National Airport Flight Extension Test conducted during the summer of 1979. During this test, south departing turbojet aircraft were directed to fly over the Potomac River corridor an additional five miles prior to being directed toward their destinations. Monitoring sites were set up in the affected areas to determine the effect of the change in operations on the ambient noise levels. Equivalent noise levels (Leq) were obtained on an hourly basis and averaged for each site. The results show no statistically significant change in averaged equivalent noise levels at three sites. Significant decreases in Leq were recorded at four sites and five of the twelve sites observed some statistically significant increase in equivalent sound levels. Maximum levels (dBA) were also recorded for single aircraft events. The average maximum noise levels for the single event, during the afternoon period at Accokeek Park, for example, increased from 6.5 dB(A) to 13.5 dB(A) over the normal operational levels, varying with aircraft type. This increase in maximum levels, combined with the increased number of overflights (from 0 to 5 per hour before to 15 to 20 per hour during

the test period) produced the increase in average equivalent noise levels in the southern region of the affected area.

- AN (1) AD-A089 139/XAG
FG (2) 061500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE
TI (6) Changes in the Oxygen-Hemoglobin Dissociation Curve and Time of Useful Function at Hypobaric Pressures in Rats after Chronic Oral Administration of Propranolol
AU (10) McKenzie, J. M.
Higgins, E. A.
Funkhouser, G. E.
Moses, R.
Fowler, P. R.
RD (11) May 1980
PG (12) 14 Pages
RS (14) FAA-AM-80-10
RC (20) Unclassified report
NO (21) See also Rept. no. FAA-AM-79-10 dated Mar 79, AD-A068 535.
DE (23) *Sympatholytic agents
Oxygen, Hemoglobin, Dissociation, Rats, Statistical data, Patients, Frequency
ID (25) *Propranolol, LPN-FAA-AM-A-79-PHY-116
- AN (1) AD-A090 803/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS
TI (6) IFR Aircraft Handled Forecast by Air Route Traffic Control Center, Fiscal Years 1980-1991
AU (10) Hannan, Bernard F.
RD (11) May 1980
PG (12) 112 Pages
RS (14) FAA-AVP-80-4
RC (20) Unclassified report
DE (23) *AIR TRAFFIC INSTRUMENT FLIGHT, AIR CONTROL CENTERS, FORECASTING, REGRESSION ANALYSIS, STATISTICAL DATA, TABLES(DATA)
AB (27) The report presents the forecasts of Instrument Flight Rule (IFR)

aircraft handled by FAA air route traffic control centers (ARTCC). It serves as a base for the FAA planning and budget process in determining future requirements for facilities, equipment and manpower. The forecasts show that total aircraft handled will increase from 30.1 million in FY 1979 to 44.0 million in Fy 1991. These national total numbers along with those for the intervening years are broken down by FAA region and for each air route traffic control center in this report. (Author)

AN (1) AD-A099 967/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Miami International Airport Data Package Number 6. Airport Improvement Task Force Delay Studies.

RD (11) May 1980

PG (12) 148 Pages

RC (20) Unclassified report

NO (21) See also AD-A099 968.

DE (23) *Airports

Ground traffic, Aircraft landings, Takeoff, Delay, Runways, Taxiways, Utilization, Statistical analysis

ID (25) *Miami International Airport

AN (1) AD-A103 677/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK FLIGHT STANDARDS

NATIONAL FIELD OFFICE

TI (6) Evaluation of St. Louis LDA/DME Runway 12L Approach.

DN (9) Memorandum rept.

AU (10) Juhlin, Dean

Parr, Frank

RD (11) May 1980

PG (12) 101 Pages

RS (14) FAA-AFO-500-18

RC (20) Unclassified report

DE (23) *AIRPORTS, *COMMERCIAL AVIATION, *RUNWAYS

APPROACH, VISUAL FLIGHT RULES, INSTRUMENT FLIGHT, TEST AND EVALUATION,

FLIGHT TESTING, MISSOURI, CAPACITY(QUANTITY), PARAMETERS, PARALLEL ORIENTATION, FEASIBILITY STUDIES, MATHEMATICAL PREDICTION

ID (25) St. Louis Lambert International Airport, LPN-AFO-560-79-22

AB (27) Arrival delays at St. Louis Lambert International Airport, MO, prompted Washington Headquarters to authorize an evaluation of a new approach concept using an offset localizer for an LDA/DME approach to runway 12L. The localizer was installed as proposed and flight tests flown in several different aircraft. Flight tracks of the approaches were studied, along with inflight data recorded by video cameras and tape recorders. Original figures on the approach plate were changed to more realistic numbers due to additional knowledge introduced by Ozark Airlines with the aid of their DC-9 simulator. Math model figures calculated by AFO-560 supported these figures. The evaluation of the proposed approach concept found it to be safe, flyable, and acceptable to pilots.

AN (1) AD-A110 354/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semi-annual rept. no. 11, 1 Jul-31 Dec 79.

RD (11) 22 May 1980

PG (12) 40 Pages

RS (14) FAA-ACS-82-11

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Security, *Civil aviation

Aviation safety, Commercial aviation, Threats, Sabotage, Aircraft hijacking, Bombs, Explosives, Weapons, Detectors, Passengers, Terrorism, Prevention

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

SE (34) 11

AN (1) AD-A084 619/XAG

FG (2) 010200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Aircraft Crashworthiness Studies: Findings in Accidents Involving an Aerial Application Aircraft

AU (10) Kirkham, William R.

Simpson, James M.

Wallace, Terry F.

Grape, Paula M.

RD (11) Apr 1980

PG (12) 44 Pages

RS (14) FAA-AM-80-3

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS

CRASHES, PROTECTION, COCKPITS, RESTRAINT, PILOTS, HARNESES, IMPACT,

AIRCRAFT SEATS, AVIATION INJURIES, CRASH INJURIES, FAILURE(MECHANICS)

ID (25) Crashworthiness, LPN-FAA-AM-B-79-TOX-23

AB (27) Aircraft crashworthiness features are presented, as others have done, in terms of packaging principles. Modern aerial application aircraft are recognized as being the most crashworthy in the civil aviation fleet. Eighteen accidents involving an aerial application aircraft are presented in regard to crashworthiness findings, crashworthiness being the protection afforded by the aircraft against injury to the pilots from impact forces. A summary of findings showed that the cockpit afforded good protection but in many of the accidents pilot restraint systems failed. There were no failures in lap belts or lap belt attachments. The structural attachment of the shoulder harness failed in a rare accident and the manufacturer strengthened the attachment. In three aircraft the inertia reel, to which the shoulder harness was attached, failed, diminishing the effectiveness of the shoulder harness in attenuating impact forces on the pilots. IN 14 of the 18 accidents the seat completely or partially separated from the seat track, and in 14 accidents one or more of the cast alloy seat legs or pedestals broke. These accidents illustrate two areas of concern in terms of improved crashworthiness of these aircraft. One is the strength of the attachment of the shoulder harness, and the other is the apparent ease of detachment of seats from the seat tracks and failure (fracture) of the cast alloy seat parts--legs and pedestals in particular. (Author)

AN (1) AD-A085 108/XAG

FG (2) 170703

250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Discrete Address Beacon System/Air Traffic Control (DABS/ATC) Facility Surveillance and Communications Message Formats.

DN (9) Final rept.

AU (10) DeMeo,J.

RD (11) Apr 1980

PG (12) 50 Pages

RS (14) FAA-RD-80-14

RC (20) Unclassified report

NO (21) Supersedes Rept. no. FAA-RD-74-63B, AD-A073 461.

DE (23) *Discrete Address Beacon Systems, *Communications networks

Data links, Formats, Message processing, Input, Surveillance, Communications traffic, Air Traffic Control Systems, Radar beacons

AB (27) This document defines formats for messages which are to be transmitted between DABS and ATC facilities (en route or terminal). These messages include one-way surveillance reports to ATC and two-way communications messages. The latter support data link functions between ATC and DABS-equipped aircraft, as well as aiding in the monitoring and control of DABS sensors.

AN (1) AD-A085 241/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Air Traffic Control (ATC) Facility Hardware Interfaces for Discrete Address Beacon System (DABS).

DN (9) Final rept.

RD (11) Apr 1980

PG (12) 18 Pages

RS (14) FAA-RD-80-38

RC (20) Unclassified report

DE (23) *Air Traffic Control Systems, *Discrete address beacon systems

Interfaces, Surveillance, Communications networks, Digital systems, Data links, Formats, Input output processing

AB (27) The Discrete Address Beacon System (DABS) is an evolutionary upgrading of the Air Traffic Control Radar Beacon System (ATCRBS). DABS provides improved surveillance and an integral ground-air-ground digital data link for transmission of Air Traffic Control (ATC) communications messages between ATC and DABS-equipped aircraft. Surveillance data and data link services will be provided via land lines to ATC facilities.

The DABS/ATC interface consists of two digital links to each facility: a two-way communications link and a one-way surveillance link from DABS to ATC. This document describes the ATC facility (terminal and en route) hardware required for interfacing with DABS surveillance and communications links. (Author)

AN (1) AD-A085 482/XAG

FG (2) 120600

170703

250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Discrete Address Beacon System (DABS) Front End Processor/En Route Central Computer Complex Protocol.

DN (9) Final rept.

RD (11) Apr 1980

PG (12) 17 Pages

RS (14) FAA-RD-80-37

RC (20) Unclassified report

DE (23) *Discrete Address Beacon Systems, *Data links, *Control systems, *Computer applications

Message processing, Formats, Communications networks, Transponders, Data reduction, Air traffic control systems, Front end processors

ID (25) CIDIN(Command ICAO Data Interchange Network), Protocols

AB (27) The FAA has developed the Discrete Address Beacon System (DABS) as an evolutionary replacement for the current Air Traffic Control Radar Beacon System (ATCRBS). The DABS sensor, singly and in cooperation with other DABS sensors, will provide surveillance of, and two-way digital communications with aircraft equipped with DABS transponders, and provide surveillance of ATCRBS-equipped aircraft. Surveillance data and data link services will be provided via suitable land lines to Air Traffic Control (ATC) facilities (terminal and en route). The DABS/ATC interface consists of two digital links to each facility: a two-way communications link and a one-way surveillance link from sensor to ATC. The Common ICAO Data Interchange Network (CIDIN) protocol is used on the two-way communications data link. When DABS is interfaced to an en route ATC facility, a special device, called the front end processor (FEP) is used to perform translation between the CIDIN protocol and the protocol used by the En Route Central Computer Complex (CCC). This document defines the protocol to be used between the FEP and the En Route CCC. (Author)

AN (1) AD-A087 690/XAG

FG (2) 060500

061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Medical and Toxicological Factors in Aircraft Accidents

AU (10) Kirkham,William R.

RD (11) Apr 1980

PG (12) 12 Pages

RS (14) FAA-AM-80-6

RC (20) Unclassified report

DE (23) *Aviation accidents, *Accident investigations

Inspection, Pilots, Incapacitation, Toxicity, Hypoxia, Drugs, Gases

AB (27) A number of factors operating within pilots may impair their ability to operate aircraft in a safe manner, thus accounting for some of the 83 to 87 percent of pilot 'causes' of general aviation accidents. Aircraft accident investigators should be attuned to characteristics of the accident, witness statements, and autopsy and laboratory findings that may suggest partial or complete incapacitation in the pilot. Incapacitation may be brought on by a medical condition which may be revealed at autopsy or be inferred only from medical history. Spatial disorientation is a subjective evaluation only and a form of incapacitation rated as the third most frequent 'cause' of fatal general aviation accidents. Lack of oxygen--hypoxia--is a constant threat to incapacitate in aircraft operating at high altitudes. Toxicological factors such as alcohol, drugs, and gases (e.g., carbon monoxide) should always be sought in fatal aircraft accidents by obtaining blood, urine and other specimens for laboratory analyses. Aerial application pilots may be incapacitated by the poisonous materials they apply, especially the cholinesterase-inhibiting insecticides. The finding of therapeutic drugs in the blood or other specimens from accident victims, or of tablets, pills, etc., at the scene, may point to underlying medical conditions that may impair pilot performance. The author discusses these principles and illustrates them briefly with cases to make accident investigators and others aware of the importance of medical and toxicological factors in aircraft accidents. (Author)

AN (1) AD-A099 959/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION KANSAS CITY MO CENTRAL REGION

TI (6) Air Traffic Delay Study Group Report. Central Region.

RD (11) Apr 1980

PG (12) 49 Pages

RC (20) Unclassified report

DE (23) *Air traffic

Airports, Missouri, Urban areas, Delay, Reduction, Air traffic control systems, Air control centers

AB (27) Due to several factors, which include increased traffic and enroute traffic flow restrictions, arriving and departing users of the St.

Louis Airport have experienced increasing delays. The hourly traffic count at St. Louis-Lambert has increased considerably with a projection of further increase. American Airlines plan to double their daily operations and Eastern, Trans World and Ozark have announced plans to increase flight operations during the coming year. In view of these projections, St. Louis Tower and Kansas City Center were asked to collectively develop a working group, consisting of facility officers, staff, supervisors and controllers. The working group concerned themselves with existing constraints and projected resources necessary to accommodate future traffic demands. This report is the result of those efforts by the working group.

AN (1) AD-A084 235/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) National Aviation Fuel Scenario Analysis Program (NAFSAP). Volume I. Model Description. Volume II. User Manual.

DN (9) Final rept.

AU (10) Vahovich, Stephen G.

RD (11) Mar 1980

PG (12) 17 Pages

RS (14) FAA/EE-80-12

RC (20) Unclassified report

DE (23) *Commercial aircraft, *Jet transport planes, *Models, *Fuel consumption, *Passenger aircraft, *Computerized simulation User needs, Instruction manuals, Forecasting

AB (27) This report forecasts air carrier jet fuel usage by body type for three user defined markets. The model contains options which allow the user to easily change the composition of the future fleet so that fuel usage scenarios can be 'run'. Both Volumes I and II are contained in this report. Volume I describes the structure of the model. Volume II is a computer users manual. (Author)

AN (1) AD-A084 801/XAG

FG (2) 060700

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Cosmic Radiation Exposure During Air Travel

AU (10) Friedberg, W.

Neas, B. R.

RD (11) Mar 1980

PG (12) 31 Pages

RS (14) FAA-AM-80-2

RC (20) Unclassified report

DE (23) *Radiation effects, *Radiation protection, *Cosmic rays Galaxies, Solar radiation, Air transportation, Commercial aviation, Supersonic aircraft, High altitude, Monitoring, Exposure (Physiology)

ID (25) Concorde flights

AB (27) In 1967 the FAA appointed an advisory committee on radiation biology aspects of SST flight. Some of the committee members were subsequently appointed to a working group to study radiation exposure during air travel in conventional jet aircraft. Presented here, in some cases in revised form, is selected material from the final reports of the full committee and the working group and related material from other sources. Included are: (1) brief descriptions of the galactic and solar cosmic radiation environment; (2) estimates of accumulated radiation dose during air travel and associated risks of genetic and somatic effects; (3) altitude, solar cycle, and geomagnetic latitude profiles of galactic radiation; (4) radiation protection recommendations by the committee; (5) current status of forecasts and monitoring of solar cosmic radiation events; and (6) operational experience related to Concorde flights. (Author)

AN (1) AD-A085 002/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Master Plan: Flight Service Station Automation Program. Addendum.

RD (11) Mar 1980

PG (12) 16 Pages

RS (14) FAA/RD-80-52, FAA/RD-FSS-01A1

RC (20) Unclassified report

NO (21) Addendum to report dated Jan 78, AD-A052 001.

DE (23) *Civil aviation, *Terminal flight facilities

Ground stations, Federal law, Regulations, Automation, Air traffic control systems

ID (25) *Flight service stations, General aviation

AB (27) The Flight Service Station Master Plan provides for automation of the highest activity stations and introduction of pilot self-service features. The Master Plan, however, deferred decisions on several key issues. The proposed resolution of these issues is as follows: The distribution and location of Flight Service Stations (domestic and nonconterminous) and possible collocation with Air Route Traffic Control Centers. We have identified 61 sites for automated Flight Service Stations. We have decided against collocation because it isolates the Flight Service Stations. System from the primary user, General Aviation. Construction of suitable quarters to house the automated facilities. New buildings will be required at 59 of the 61 sites to accommodate consolidation and automation. The consolidation of existing Flight Service Stations into the new facilities. Consolidation of adjacent Flight Service Stations into the automated facility will not be initiated until we have shown the level of service at the new facility to be at least equal to the service available at the nonautomated locations. As a result of these measures, the total cost of automating and consolidating the Flight Service Station network would be increased from \$453 million to \$495 million, a difference of \$42 million. (Author)

AN (1) AD-A092 268/XAG

FG (2) 010600
061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Ozone (0.30 Parts per Million, approximately 600 micro g/cu m) on Sedentary Men Representative of Airline Passengers and Cockpit Crewmembers.

AU (10) Higgins, E. A.

Lategola, M. T.

Melton, C. E.

Vaughan, J. A.

RD (11) Mar 1980

PG (12) 54 Pages

RS (14) FAA-AM-80-9

RC (20) Unclassified report

DE (23) *Ozone

Passengers, Commercial aviation, Flight crews, Cockpits, Pilots, Physiological effects, Eye, Irritation, Headaches, Nose (Anatomy), Throat, Dark adaptation, Threshold effects

ID (25) LPN-FAA-AM-E-79-PHY-119, LPN-FAA-AM-E-80-PHY-124

AB (27) This study was undertaken to determine the effects of 0.30 ppmv ozone on 40 men representative of airline pilots. All were medically fit; 20 were smokers and 20 were nonsmokers. Subjects were divided into two age groups, 40-49 years and 50-59 years. The experiments consisted of exposure to 0.30 ppmv ozone and, on another occasion, to air only for 3 h at a simulated altitude of 6,000 ft mean sea level. Subjects were sedentary throughout the experiment. Ozone had no effect on heart rate and short-term memory. The group showed a statistically significant incidence of symptoms related to ozone exposure; most were shown by the 40- to 49- year-old nonsmoking group while at altitude and postaltitude, and in smokers in the 50- to 59-year age group only at altitude. Eye irritation was the commonest symptom, followed by headache, nasal irritation, and throat irritation. Data showed significant effects of ozone on forced expiratory volume, 1-second forced expiratory volume, and forced end-expiratory flow. The pulmonary effect of ozone appears to be principally on the small airways. Impairment of visual accommodation was associated with ozone. Dark adaptation threshold was elevated in ozone in the 50- to 59-year nonsmoking age group. Retinal bleach recovery time was retarded and blink rate was higher during ozone exposure. It is concluded that 0.30 ppmv ozone is near threshold for adverse effects of ozone. The data are also applicable to passengers who fit into the same category as these sedentary subjects. (Author)

AN (1) AD-A085 069/XAG

FG (2) 010500
050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Boredom and Monotony as a Consequence of Automation: A Consideration of the Evidence Relating Boredom and Monotony to Stress

AU (10) Thackray, Richard I.

RD (11) Feb 1980

PG (12) 19 Pages

RS (14) FAA-AM-80-1

RC (20) Unclassified report

DE (23) *Automation, *Air traffic controllers, *Boredom

Vigilance, Morale, Performance(Human), Stress(Psychology)

ID (25) Monotony

AB (27) As air traffic control becomes increasingly automated, the various implications of this trend should be considered. One of the likely byproducts of highly automated air traffic control systems is an increase in boredom and monotony among controllers as a result of the anticipated reduction in task demands. Boredom and monotony are generally conceded to be negative factors that can have adverse effects on morale, performance, and quality of work. This paper examines the evidence for yet another claimed effect of boredom and monotony, viz, that these factors are stressors, and that because they are stressors, they may produce effects even more detrimental than those mentioned above. Both laboratory and field studies are examined for evidence of increased neuroendocrine activity during exposure to monotonous or understimulating conditions. It is concluded that the available data offer no support for the belief that boredom, monotony, or understimulation per se produces the syndrome of stress. However, monotony coupled with a need to maintain high levels of alertness, which might exist if controllers lacked sufficient confidence in an automated system, could represent a combination capable of eliciting considerable stress. (Author)

AN (1) AD-A089 428/XAG

FG (2) 060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Postmortem Coronary Atherosclerosis Findings in General Aviation Accident Pilot Fatalities: 1975-1977

AU (10) Booze, C. F., Jr.

Pidkowicz, J. K.

Davis, A. W.

Bolding, F. A.

RD (11) Feb 1980

PG (12) 13 Pages

RS (14) FAA-AM-80-8

RC (20) Unclassified report

DE (23) *Atherosclerosis

Aviation accidents, Pilots, Mortality rates, Autopsy

AB (27) The autopsies of 764 pilots involved in fatal general aviation accidents during the years 1975-1977 were reviewed to appraise the age specific prevalence of coronary atherosclerosis among the autopsied group. Fifty-one percent of the pilots killed in aircraft accidents and

autopsied during 1975-77 were found to have some degree of coronary atherosclerosis ranging from minimal to severe. However, only about 5 percent of the autopsied group were categorized as having severe coronary atherosclerosis. The rate per 1,000 of severe coronary atherosclerosis increased with age from 14.5 for ages less than 30 to 89.9 for ages 50 years and above, with the rate nearly tripling from ages 30-39 to 40-49 (22.1 to 63.6). While the findings of this study are consistent with, and do parallel, the findings of other recent autopsy studies, the prevalence of coronary atherosclerosis among this group of autopsied airmen is less than would have been expected based on the results of these other studies. (Author)

AN (1) AD-A099 966/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Miami International Airport Data Package Number 5, Airport Improvement Task Force Delay Studies.

RD (11) Feb 1980

PG (12) 121 Pages

RC (20) Unclassified report

NO (21) See also AD-A099 967.

DE (23) *Airports

Ground traffic, Aircraft landings, Takeoff, Delay, Runways, Taxiways, Utilization, Statistical analysis

ID (25) *Miami International Airport

AN (1) AD-A082 637/XAG

FG (2) 010500

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SYSTEM

PLANS

TI (6) A Review of the Airport Development Aid Program (ADAP) and Assessment of Future Program Needs.

DN (9) Final rept. 1970-1978.

RD (11) Jan 1980

PG (12) 49 Pages

RS (14) FAA-ASP-80-3

RC (20) Unclassified report

DE (23) *Airports, *Grants

Federal budgets, Distribution, Civil aviation

ID (25) *Federal aid, *ADAP(Airport Development Aid Program), Expenditures, Improvements

AB (27) This report was prepared to assess the accomplishments of the Airport Development Aid Program (ADAP) authorized by the Airport and Airway Development Act of 1970. It was undertaken at this time as part of the process of developing a legislative proposal for Federal aid to airports after 1980. The report examines the \$3.9 billion of Federal, State, and local expenditures that were made during fiscal years 1971 through 1978 and identifies areas where changes might be made to achieve a more effective Federal aid program for airports in the future. The report also provides a brief outline of accomplishments under the Planning Grant Program (PGP). (Author)

AN (1) AD-A085 481/XAG

FG (2) 010301

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF FLIGHT OPERATIONS

TI (6) Airborne Radar Approach, FAA/NASA Gulf of Mexico Helicopter Flight Test Program.

DN (9) Final rept.

AU (10) Pate,Donald P.

Yates,James H.

RD (11) Jan 1980

PG (12) 157 Pages

RS (14) FAA/AFO-507-78-2

RC (20) Unclassified report

DE (23) *Aircraft landings, *Radar equipment, *Helicopters

Platforms, Offshore drilling, Discrete distribution, Meteorological radar, Radar mapping, Pilots, Flight testing, Mexico Gulf, Acceptability, Airborne

ID (25) Approach radar, ARA(Airborne Radar Approaches), Drilling platforms, Airspace requirements, Obstacle clearance

AB (27) A joint FAA/NASA helicopter flight test was conducted in the Gulf of Mexico to investigate the airborne weather and mapping radar as an approach system for offshore drilling platforms. Approximately 120 Airborne Radar Approaches (ARA) were flown in a Bell 212 by 15 operational pilots. The objectives of the test were to (1) develop ARA procedures, (2) determine weather minimums, (3) determine pilot acceptability, (4) determine obstacle clearance and airspace requirements. Aircraft position data was analyzed at discrete points along the intermediate, final, and missed approach. The radar system error and radar flight technical error were determined in both range

and azimuth, and the capability of the radar as an obstacle avoidance system was evaluated. (Author)

AN (1) AD-A085 628/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) First Commuter Air Carrier Safety Symposium, January 16 - 17, 1980.

RD (11) Jan 1980

PG (12) 258 Pages

RC (20) Unclassified report

DE (23) *Aviation safety, *Commercial aviation, *Symposia

Regulations, Aviation accidents, Prevention, Airworthiness, Aircraft maintenance, Terminal flight facilities

ID (25) *Commuter air carriers

AB (27) This is the first commuter air carrier safety symposium held by the FAA. The objective is to review the significant problems which are inseparable from safety issues. Most of the accidents which have occurred in the last several years have involved recurring contributing factors--in operations, maintenance, and training--and most are truly avoidable. The program is directed toward a listening session and regulatory overview; the industry presented its perspectives with reliability, and air-worthiness; human factors considerations in accident prevention; and the prospects of, or needs for, airport and airway development for commuter service.

AN (1) AD-A086 046/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Active BCAS Performance in a Garble Environment

AU (10) Koenke,Edmund J.

RD (11) 24 Jan 1980

PG (12) 50 Pages

RS (14) FAA-EM-80-1

RC (20) Unclassified report

DE (23) *Aviation safety, *Collision avoidance, *Beacons, *Transmitters

Receivers, Flight paths, Power

ID (25) Interrogation rates, BCAS(Beacon Collision Avoidance System), Garble environments, Closure rates, Degarble capacity, Evasive maneuvers, Transmitter powers, Aircraft densities, Receiver sensitivity

AB (27) A basic design tool has been developed which includes the principal

BCAS design parameters, namely, transmitter power, receiver sensitivity, aircraft density, closure rate, degarble capability, and interrogation rate. This tool can be directly applied to the evaluation of alternative BCAS design concepts as well as for parametric design studies. Results of a comparison between an ATCRBS/DABS BCAS and an ATCRBS only BCAS are presented leaving little doubt concerning the performance advantage offered by the inclusion of the DABS link for evasive maneuver coordination. It must be emphasized that neither of the BCAS systems analyzed in this report are representative of the active BCAS defined in the draft National Standard for active BCAS. (Author)

AN (1) AD-A100 733/XAG

FG (2) 050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) The Effect of the Airline Deregulation Act on the Level of Air Safety. Annual Report of the Secretary of Transportation to the United States Congress Pursuant to Section 107 of the Airline Deregulation Act of 1978 (P.L. 95-504).

RD (11) Jan 1980

PG (12) 102 Pages

RC (20) Unclassified report

DE (23) *Aviation safety

Air transportation, Passenger aircraft, Regulations, Federal law, Aviation accidents, Statistical analysis

ID (25) Airlines, *Deregulation

AB (27) This report was prepared in response to the requirements of section 107 of the Airline Deregulation Act of 1978 (P.L. 95-504). It reviews the impact of deregulation on air carrier operations in calendar year 1979, with emphasis on the carriers extensively involved in scheduled domestic passenger service in the contiguous United States and statistically explores the accident, incident and violation records of these carriers. The statistical data from calendar year 1979 does not show that the level of air safety was adversely affected by deregulation. There were no accidents in which deregulation was determined to be a direct causal factor. The accident and fatal accident rates for certificated route carriers closely parallel those of previous years. Only the fatality number and rate, resulting from two accidents of wide-bodied jet aircraft, were higher. The commuter airline accident and fatal accident rates for 1979 remained comparably similar to the past 4 years of reported data, while the commuters experienced one of their highest traffic growth rates as a result of the stimulus provided by deregulation. (Author)

AN (1) AD-A086 009/XAG

FG (2) 010500

010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Federal Aviation Administration Activities in the Agency's 50th Year. An In-Depth Report.

RD (11) 1980

PG (12) 349 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Regulations, *United States Government

Aviation safety, Navigation, Air traffic control systems, Airports, International relations, Policies, District of Columbia, Emergencies, Preparation, Management

ID (25) *Federal Aviation Administration, Emergency preparedness

AB (27) What does FAA with its worldwide organization, its 58,000 employees and its \$3 billion annual budget, accomplish in a given year? This report is an attempt to answer that question as fully as possible for a representative year-in this case, the agency's 50th. Its activities were chosen for in-depth examination for at least three principal reasons: first, because the year was an important landmark in the agency's history justifying such an examination; second, because the review would provide a valuable benchmark for measuring the accomplishments of future years; and third, because much of what the agency accomplished during the year was addressed to meeting the challenges of the 80's--the crucial eighth decade of the 20th century in which we now find ourselves. (Author)

AN (1) AD-A089 450/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Hourly Airport Activity Profiles: 30 Airports by User, 3 Airports by User and Equipment Type, Selected Days in June, July, and August 1978.

RD (11) 1980

PG (12) 156 Pages

RS (14) FAA-AVP-80-7

RC (20) Unclassified report

DE (23) *Air traffic

Airports, Aircraft landings, Takeoff, Statistical data, Graphs, Tables(Data)

AB (27) The first section of this report contains statistics on aircraft operations, by user category for 30 airports for selected days in June, July and August 1978. Using the series of tables and graphs on Atlanta as an example, the data should be interpreted as described in the following paragraphs. First, note that the data used for generating the statistics in the table included all operations occurring in Atlanta during August 1978. Local time in this case would be equivalent to eastern daylight time. Aircraft operations occurring between midnight and 1:00 a.m. are counted in time slot zero. Similarly, activity occurring between 12:00 noon and 1:00 p.m. is assigned to time slot 12:00. The second part of this report consists of six tables and seven graphs which portray total daily aircraft departures and average hourly aircraft departures by equipment type for three cities: Kansas City, Missouri; Omaha, Nebraska; and St. Louis, Missouri. This part of the report may be regarded as exploratory in nature. The tables and graphs provide, for the first time, information on departures by equipment type, by hour of the day. Previously, such information was available for air carrier operations at the top 100 air carrier airports. The information in this section includes operations by all user categories.

AN (1) AD-A100 704/XAG

FG (2) 010500

050400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR

FOR AIRPORTS

TI (6) Operations Under the Airport and Airway Development Act of 1970.

DN (9) Rept. no. 11 (Annual) for period ending 30 Sep 80

AU (10) Martin, Virginia J.

RD (11) 1980

PG (12) 122 Pages

RS (14) FAA-ARP-81-1

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-ARP-80-1, AD-A086 293.

DE (23) *Airports

Facilities, Modification, Federal budgets, Costs

ID (25) Federal aid, Funding

AB (27) Section 24 of the Airport and Airway Development Act of 1970 (P.L. 91-258) requires that the Secretary, Department of Transportation, submit an annual report to Congress of operations under Part II of the Act for the preceding fiscal year. This report covers operations for the fiscal year ending September 30, 1980. (Author)

SE (34) 11

AN (1) AD-A120 090/XAG

FG (2) 010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT

SYSTEMS

TI (6) Terminal Area Air Traffic Relationships (Peak Day/Busy Hour) Fiscal Year 1980.

RD (11) 1980

PG (12) 68 Pages

RC (20) Unclassified report

NO (21) See also AD-A088 370.

DE (23) *Air traffic

Civil aviation, Airports, Air traffic control terminal areas, Aircraft landings, Takeoff, Statistical analysis, Tables(Data)

ID (25) Air carriers

AB (27) Terminal Area Air Traffic Relationships furnishes peak day and busy hour air traffic counts for each airport at which a Federal Aviation Administration air traffic control tower operated during all of fiscal year 1980. Also provided are average daily and hourly operations computed from the annual operations count. Measures of peaking characteristics are given by the ratios peak day to average day and of busy hour to average hour by individual airports. The airports are separated into air carrier and general aviation airports because of the different characteristics of the two groups. (Author)

AN (1) AD-A081 520/XAG

FG (2) 040100

240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND

ENERGY

TI (6) Federal Aviation Administration High Altitude Pollution Program, Second Biennial Report Prepared in Accordance with the Ozone Protection Provision, Section 153(g), of the Clean Air Act Amendments of 1977.

DN (9) Biennial rept. Jan 78-Dec 79

AU (10) Sundararaman, N.

Smith, W.

Rogers, J.

RD (11) Dec 1979

PG (12) 65 Pages

RS (14) FAA-EE-79-24
RC (20) Unclassified report
DE (23) *AIR POLLUTION, *OZONE, *AIRCRAFT, *UPPER ATMOSPHERE,
*STRATOSPHERE,
*ENVIRONMENTAL IMPACT STATEMENTS
DEPLETION, HIGH ALTITUDE, NITROGEN OXIDES, ATMOSPHERE MODELS,
ATMOSPHERIC CHEMISTRY, LEGISLATION

ID (25) Clean Air Act

AB (27) This report was prepared in accordance with the Stratospheric Ozone Protection provisions of Public Law 95-95, the Clean Air Act Amendments of 1977. The impact of high altitude aviation on stratospheric ozone is now believed to be an increase in total columnar ozone for flights up to 20 km (about 66,000 feet). This result has been brought about through improvements in one-dimensional chemical kinetics-transport model of the stratosphere. They show that aircraft-injected pollutants (primarily nitrogen oxides) generate ozone through simplified 'smog' mechanisms in the upper troposphere and lower stratosphere while depleting it through the classic catalytic destruction mechanism at higher altitudes. The net result at present is a slight overall ozone increase. The uncertainty in the present model calculations, however, is unknown. The effort of the High Altitude Pollution Program of the Federal Aviation Administration is aimed at identifying and resolving the uncertainties so that a 'consensus' method or methods can be obtained for future assessments of the impacts of high altitude aviation on the environment.

AN (1) AD-A082 023/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT

ENGINEERING MANAGEMENT

TI (6) FAA Response to User Consensus Views and Recommendations: New
Engineering and Development Initiatives - Policy and Technology
Choices.

RD (11) Dec 1979

PG (12) 89 Pages

RS (14) FAA-EM-79-8

RC (20) Unclassified report

DE (23) *Air traffic controllers

Civil aviation, User needs, Airports, Air space, Aviation safety,
Weather

AB (27) Twenty one months ago the Federal Aviation Administration asked the
aviation community for its ideas on the directions to be taken in

engineering and development. That effort was called 'New Engineering
and Development Initiatives - Policy and Technology Choices'. Published
last March was a document 'Consensus of Views of User/Aviation Industry
Representatives', which summarized the user community views. This
document represents the Federal Aviation Administration's response to
ideas on the directions it should take in engineering and development
planning. It presents user recommendations and comments in 53 basic
areas. Future Federal Aviation Administration Programs and priorities
will be guided by the user's recommendations in working to achieve the
highest level of safety and efficiency in the National Aerospace
System. (Author)

AN (1) AD-A092 414/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT

SYSTEMS

TI (6) Census of U.S. Civil Aircraft, Calendar Year 1978.

DN (9) Annual rept.

RD (11) 31 Dec 1979

PG (12) 379 Pages

RC (20) Unclassified report

AL (22) Availability: Superintendent of Documents, GPO, Washington, DC 20402 HC
\$8.50. Microfiche furnished to DTIC (and NTIS) users.

DE (23) *Civil aviation, *Aircraft

Aircraft engines, Statistical data, Tables(Data)

ID (25) Censuses

AB (27) This report covers statistical data, including General Aviation, Air
Carrier, detailed computer printouts for aircraft, and a Glossary of
the terms used in this publication.

24

AN (1) AD-A093 081/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT

SYSTEMS

TI (6) FAA Statistical Handbook of Aviation. Calendar Year 1979.

DN (9) Annual rept.

RD (11) 31 Dec 1979

PG (12) 137 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic
Statistical data, Aviation accidents, Commercial aviation, Terminal flight facilities, Passengers, Airports, International airports, Handbooks
ID (25) General aviation
AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aeronautical Production and Exports, Aircraft Accidents, and a Glossary of the terms used in this publication.

AN (1) AD-A110 353/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION
SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semi-annual rept. no. 10, 1 Jan-30 Jun 79.

RD (11) 05 Dec 1979

PG (12) 43 Pages

RS (14) FAA-ACS-82-10

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Security, *Civil aviation

Aviation safety, Commercial aviation, Threats, Sabotage, Aircraft hijacking, Bombs, Explosives, Weapons, Detectors, Passengers, Terrorism, Prevention

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

SE (34) 10

AN (1) AD-A080 929/XAG

FG (2) 010300

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Runway Image Shape as a Cue for Judgment of Approach Angle

AU (10) Mertens, Henry W.

RD (11) Nov 1979

PG (12) 62 Pages

RS (14) FAA-AM-79-25

RC (20) Unclassified report

DE (23) *Runways, *Judgement(Psychology)

Airports, Angles, Approach, Aircraft landings, Vertical orientation

ID (25) LPN-FAA-AM-D-79-PSY-80

AB (27) One cue for visual judgment of glidepath angle has been referred to as form ratio. Form ratio is defined as the ratio of vertical height of the runway to width of the far end in the runway retinal image. The ability of pilots to judge form ratios was compared with the ability to judge approach angles in the nighttime 'black hole' situation in two experiments. In one experiment, 16 pilots observed a stationary model of a lighted airport runway under nighttime conditions at different simulated approach angles from a simulated distance of 8,000 ft from threshold. Pilots made verbal judgments of approach angle using the categories 'low,' 'high,' and 'OK,' and on half the trials also estimated form ratios. In the second experiment, 20 pilots made observations both in a similar static condition at simulated distances of 8,000 ft and 26,000 ft from threshold, and in a dynamic condition in which they controlled the model to produce (i) specified values of form ratio (1.0, 2.0, and 3.0) or (ii) a 3 deg approach angle, as the model approached them between 8,000 and 26,000 ft. The simulated approach speed was 125 knots. Responses in both static and dynamic conditions indicated a general tendency to over-estimate form ratios and approach angles less than 3 deg. Intersubject and intrasubject variability of form ratio and approach angle responses were comparable.

AN (1) AD-A081 065/XAG

FG (2) 050800

061000

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Noise Exposure on Performance of a Simulated Radar Task

AU (10) Thackray, Richard I.

Touchstone, R. Mark

RD (11) Nov 1979

PG (12) 11 Pages

RS (14) FAA-AM-79-24

RC (20) Unclassified report
DE (23) *Attention, *Noise(Sound), *Air traffic control systems, *Vigilance Monitoring, Performance(Human), Physiological effects, Heart rate, Fatigue(Physiology), Tension, Males, Females, Display systems
ID (25) LPN-FAA-AM-C-79-PSY-76
AB (27) The present study examined the effect of noise (radar control room sounds, 80 dBA) on the ability to sustain attention to a complex monitoring task. The visual display was designed to resemble that of a highly automated air traffic control radar system containing computer-generated alphanumeric symbols. Fifty-six men and women were divided into four equal-sized groups. Each group was assigned to one of four combinations of noise or quiet condition and easy or difficult version of the task. In addition to measuring performance (detection latency to specified changes in the alphanumerics), physiological recordings of heart rate and heart rate variability and subjective measures of attentiveness, fatigue, tension, annoyance, and boredom were also obtained. With the exception of heart rate variability, no significant effects of noise were obtained. Heart rate variability was significantly lower under the noise than under the quiet condition. This suggests that, although performance was unchanged, effort expenditure may have been greater under noise. (Author)

AN (1) AD-A081 155/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) A Description of the Civil Aeromedical Institute Airline Cabin Safety Data Bank: 1970-1976
AU (10) Pollard,D. W.
Anderson,J. A.
Melton,R. J.
RD (11) Nov 1979
PG (12) 43 Pages
RS (14) FAA-AM-79-23
RC (20) Unclassified report
DE (23) *Aviation safety
Data bases, Aircraft cabins, Aviation accidents, Commercial aircraft, Aviation injuries, Emergencies, Passengers
ID (25) LPN-FAA-AM-B-79-PRS-22
AB (27) This report describes the Civil Aeromedical Institute cabin safety data bank and gives summaries of injuries reflected in the over 1,400 accidents/incidents in the data bank. As an example of the uses to

which these data are applicable, the number of aircraft involved in occurrences are compared with the number in operation and selected variables. The discussion provides further insight into the data bank's potential applications. (Author)

AN (1) AD-A081 260/XAG
FG (2) 060400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Readability of Self-Illuminated Signs in a Smoke-Obscured Environment
AU (10) Rasmussen,P. G.
Garner,J. D.
Blethrow,J. G.
Lowrey,D. L.
RD (11) Nov 1979
PG (12) 11 Pages
RS (14) FAA-AM-79-22
RN (18) FAA-ARD-79-108
RC (20) Unclassified report
DE (23) *Visual signals
Visibility, Intelligibility, Visual perception, Performance tests, Obscuration, Smoke, Aviation safety, Exits, Luminance, Emergencies, Aircraft fires, Screens(Displays), Character recognition, Performance(Human)
ID (25) Self illuminated signs, LPN-FAA-AM-B-78/79-PRS-38
AB (27) This study investigates the ability of people with normal distant visual acuity to identify self-illuminated emergency signs in a smoke-obscured environment. The results indicate that signs whose background luminance meets or exceeds the requirements of Federal Aviation Regulation (FAR) 25.812 are readable under favorable conditions when the total optical density of the smoke between the observer and the signs ranges between 3.00 and 3.55. Substantial increases in character sizes in the signs produce only moderate improvement in readability. Some limitations on the practical application of these data to predicting sign visibility in adverse conditions are discussed. (Author)

AN (1) AD-A081 419/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION SYSTEM

PLANS

TI (6) Establishment Criteria for Runway End Identification Lights (REIL).

DN (9) Final rept.

AU (10) Hoffer, Stefan

RD (11) Nov 1979

PG (12) 33 Pages

RS (14) FAA-ASP-79-4

RC (20) Unclassified report

DE (23) *Runways, *Landing aids, *Identification lights, *Standards

Approach, Flight paths, Night warfare, Cost analysis, Benefits, Numerical analysis, Specifications, Requirements, Problem solving, Safety, Estimates, Operation, Budgets, Impact

ID (25) Cost benefit analysis, Candidate lights, Runway ends, Air carriers, False lights, REIL(Runway End Identification Lights)

AB (27) This report develops revised establishment criteria for the Runway End Identification Light (REIL) system based on benefit/cost analysis.

Three prerequisites must be met before a runway can be considered for REIL establishment: (1) Each potential candidate must not be equipped with or programmed for an approach light system; (2) Each potential candidate runway must be lighted and approved for night operations; (3) Each potential candidate runway must have a runway end identification problem resulting from such characteristics as overriding or false lights under its approach path. Runways meeting these requirements will qualify for a REIL system as follows: (1) A runway shall be a candidate when it records approximately 4900 air carrier, 1,200 air taxi (including commuter) or 7300 general aviation landings or an appropriate combination of these; (2) Runways not satisfying the numerical criteria shall be eligible for REIL when safety requirements dictate. (Author)

AN (1) AD-A082 471/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - En Route Control - Program 12.

RD (11) Nov 1979

PG (12) 58 Pages

RS (14) FAA-ED-12-2B

RC (20) Unclassified report

NO (21) Supersedes report dated Feb 75, AD-A007 623.

DE (23) *Air traffic control systems

Automation, Data processing, Radar, Display systems, Interfaces, Planning

ID (25) *En route traffic control systems

AB (27) Implementation of the Third Generation En Route ATC System, Model A3d2, provides basic automation capability for processing flight data and surveillance functions. Substantial upgrading of this basic capability is needed to meet the demand forecast for the en route system through the 1980's. This document describes the development plan to build the features and functions necessary for upgrading the present Third Generation En Route System. Program objectives, development activities, implementation considerations, and resource estimates are set forth.

AN (1) AD-A085 071/XAG

FG (2) 010500

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Terminal Area Forecasts, Fiscal Years 1980-1991

AU (10) Kruzic, Pamela G.

Henry, Thomas F.

Wine, Carlton R.

Hartwill, Janice

Mercer, Gene S.

RD (11) Nov 1979

PG (12) 468 Pages

RS (14) FAA-AVP-79-12

RC (20) Unclassified report

DE (23) *Terminal flight facilities, *Airports, *Air traffic control systems, *Civil aviation, *Planning, *Forecasting

Passenger aircraft, Transport aircraft, Requirements

AB (27) This document presents forecasts of key aviation activity measures for 934 airports and radar approach control facilities through the year 1991. These forecasts are prepared to meet the planning needs of the Federal Aviation Administration (FAA) offices and services concerned with future traffic levels at these facilities. Except for specific regional requests, the airports selected for inclusion in this publication meet at least one of the following criteria: (1) Existing FAA tower; (2) Candidate for an FAA tower; (3) Currently receiving or forecast to receive certificated route air carrier or scheduled passenger commuter service; or (4) Any general aviation airport that will exceed 60,000 itinerant or 100,000 total operations annually by 1981.

AN (1) AD-A091 652/XAG
FG (2) 010500
050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Summary of Airport-Air Carrier Agreements.

DN (9) Final rept.

AU (10) Williams,Roy

RD (11) Nov 1979

PG (12) 24 Pages

RS (14) FAA-AVP-79-13

RC (20) Unclassified report

DE (23) *Airports, *Commercial aviation, *Agreements
Access, Leasing, Costs, Policies

ID (25) Airlines

AB (27) This paper reviews and discusses twenty-seven long-term airport-air-carrier agreements. The discussion includes common features, fee-setting mechanisms, and concludes with a policy analysis. These lease and use agreements, because of their long terms, may represent a barrier to entry for air carriers attempting to enter new markets. Even in a deregulated environment, the need to acquire terminal access for a new entrant may be frustrated by the agreements between the airport and the incumbent carriers. This report, by analysing these agreements, points to the specific aspects of the agreements which may present problems to new entrants. It concludes that these problems, though possible, are not likely to occur. Furthermore, should problems arise, the Congress can take steps to alleviate the problem. (Author)

AN (1) AD-A078 846/XAG

FG (2) 140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Field Impact Evaluation Process on Electronic Tabular Display Subsystem (ETABS).

DN (9) Final rept. Dec 78-Jul 79.

RD (11) Oct 1979

PG (12) 33 Pages

RS (14) FAA-RD-79-100

RC (20) Unclassified report

DE (23) *Television display systems, *Systems engineering, *Test and

evaluation, *Data displays

Test methods, Cost analysis, Electronic recording systems, Information transfer, Validation

ID (25) ETABS(Electronic Tabular Display Subsystems)

AB (27) This report describes the process used in conducting a field impact evaluation of the Electronic Tabular Display Subsystem (ETABS). Various group structural and process techniques are described. These include a diagonal slice approach to team formulation and several different methods of team building, process control and conflict management. (Author)

AN (1) AD-A078 848/XAG

FG (2) 140200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Field Impact Evaluation Report on the Electronic Tabular Display Subsystem (ETABS). The Electronic Tabular Display Subsystem Field Impact Evaluation Team.

DN (9) Final rept. Dec 78-Jul 79.

RD (11) Oct 1979

PG (12) 54 Pages

RS (14) FAA/RD-79-101

RC (20) Unclassified report

DE (23) *Television display systems, *Air traffic control systems, *Data displays

Value, Electronic recording systems, Systems engineering, Job training, Logistics support, Information transfer, Job analysis, Air traffic controllers, Automation, Data reduction

ID (25) ETABS(Electronic Tabular Display Subsystems)

AB (27) A team of field personnel from air traffic and airways facilities conducted an impact assessment of the projected implementation of the Electronic Tabular Display Subsystem (ETABS) at air route traffic control centers. They further developed alternatives which could be expected to reduce or eliminate the negative consequences identified which could result from ETABS implementation. Six impact areas are addressed. These are: 1. Impact on the workforce. 2. Technological considerations. 3. Implementation. 4. Operations. 5. Training. 6. Logistics support. Conclusions and recommendations as to the most desirable alternative solutions from a field viewpoint are presented. (Author)

AN (1) AD-A079 439/XAG

FG (2) 050800

060500

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Performance Effects of Alcohol Intoxication and Hangover at Ground Level and at Simulated Altitude

AU (10) Collins, William E.

RD (11) Oct 1979

PG (12) 22 Pages

RS (14) FAA-AM-79-26

RC (20) Unclassified report

DE (23) *Intoxication, *Alcohol consumption

Performance(Human), High altitude, Simulation, Motor reactions, Tracking, Psychomotor tests, Anxiety, Reaction time, Statistical data, Ratings

ID (25) *Hangover, LPN-FAA-AM-D-77/78-PSY-62, LPN-FAA-AM-C-79-PSY-75

AB (27) Eight private pilots (four men, four women) were trained to perform on a two-dimensional tracking task (joystick control of a localizer/glideslope instrument) and a respond as quickly as possible to the onset of a red pinlight, appended to the tracking instrument, by depressing a button on the joystick. Tracking and reaction time scores were obtained under both static (stationary) and dynamic conditions (during angular acceleration), at ground level and at a simulated altitude of 12,000 ft. Subjects were tested in pairs one night per week for 3 consecutive weeks (alcohol, placebo, and sleep control sessions). Sessions began at about 1700, continuing through midnight to about 1100 the next day. Subjects performed in the evening after a monitored dinner, drank prepared beverages from 2100 to midnight, and were tested again. Subjects slept 4-5 hours, were awakened around 0645, were fed, and performed the tasks again, beginning about 0730. Ground level test sessions always preceded ascent in the altitude chamber and sessions included completion of several questionnaires and rating forms by the subjects. Impairment in tracking performance and in visual reaction time occurred during midnight sessions following alcohol ingestion. In addition, no significant altitude/alcohol interactions on performance were obtained during either acute intoxication or hangover periods.

AN (1) AD-A080 045/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Ozone on Exercising and Sedentary Adult Men and Women Representative of the Flight Attendant Population

AU (10) Higgins, E. A.

Lategola, M. T.

McKenzie, J. M.

Melton, C. E.

Vaughan, J. A.

RD (11) Oct 1979

PG (12) 105 Pages

RS (14) FAA-AM-79-20

RC (20) Unclassified report

DE (23) *Ozone

Physiological effects, Exposure(Physiology), Respiration, Females, Flight simulation, Exercise(Physiology), Heart rate, Visual acuity, Tables(Data)

ID (25) LPN-FAA-AM-B-78-PHY-115, LPN-FAA-AM-B-79-PHY-115

AB (27) Three studies at two ozone concentrations have been carried out in an attempt to define the effect level for ozone under simulated flight conditions. All experiments were carried out in an altitude chamber held at 6,000 feet MSL; relative humidity was kept at 10-12 percent and temperature at 68 - 74 F. Subjects were paid nonsmoking men and women in their third decade who had the anthropomorphic characteristics of airline flight attendants. All subjects were exposed to ozone in one experiment and to air only in another. Order of presentation of the experiments was balanced, and sessions were separated by 1 week. Study 1 consisted of exposure of 15 men and 12 women to 0.20 parts per million by volume (ppmv) ozone for 4 h with treadmill exercise for the last 10 min of each hour. In the second study 14 men and 14 women were exposed to 0.30 ppmv ozone for 3 h with 10 min exercise at the end of each hour. The third study consisted of exposure of 14 men and 14 women to 0.30 ppmv without exercise. Cardiopulmonary, performance, visual, and symptoms assessments were made.

AN (1) AD-A085 210/XAG

FG (2) 010300

010400

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050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Annual FAA Forecast Conference Proceedings (5th).

RD (11) Oct 1979

PG (12) 53 Pages

RC (20) Unclassified report

DE (23) *Symposia, *Forecasting, *Conferencing(Communications), *Aeronautics,
*Growth(General)

Environments, Interactions, Policies, Fuels, Safety, Finance, Airports,
Manufacturing, State of the art

ID (25) Forecast conference, Aviation growth, Proceedings, Deregulation,
General aviation

AB (27) Contents: Policy Issues in Today's Environment, Focus on Commuters; and
Opportunities for Aviation Growth in Today's Environment.

AN (1) AD-A092 570/XAG

FG (2) 010300

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AIRWORTHINESS**

**TI (6) Report of the Aircraft Systems/Flight Test Workshop (1979) Aircraft
Engineering Division, Systems and Flight Test Branches, held October 2
-10, 1979, NASA/AMES Research Center, Moffett Field, California.**

DN (9) Final rept.

RD (11) 10 Oct 1979

PG (12) 382 Pages

RS (14) FAA-AWS-79-2

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *Military aircraft, *Airworthiness, *Standards, *Workshops, *Flight
testing

Standardization, Aircraft, Inspection, Maintenance, Aircraft equipment,
Aircraft industry, Regulations

AB (27) The Systems/Flight Test Workshop report contains those agenda items of
mutual interest between regional and headquarters organizations which
were investigated, discussed, and for which proposed solutions
developed. The goal of the Workshop is to develop standardization and a
unified position for improved airworthiness standards and certification
procedures. Workshop products may include policy and guidance material.
(Author)

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AN (1) AD-A075 382/XAG

FG (2) 010600

050300

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY**

TI (6) FAA Aviation Forecasts; Fiscal Years 1980 - 1991.

RD (11) Sep 1979

PG (12) 91 Pages

RS (14) FAA-AVP-79-9

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic

Forecasting, Economic analysis

AB (27) The Official Federal Aviation Administration (FAA) forecasts of
domestic aviation activity for the years 1980 to 1991 are presented in
this volume. It contains forecasts of aviation activity at FAA towered
airports and Air Route Traffic Control Centers, as well as services
provided by flight service stations. Aviation activity forecasts for
the four major users of the National Airspace System--the trunk and
local air carriers, the air taxi and commuter air carriers, general
aviation, and the military--also are presented. (Author)

AN (1) AD-A079 493/XAG

FG (2) 120500

120600

200100

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT AND
ENERGY**

TI (6) Integrated Noise Model (INM). Version 2. User's Guide

AU (10) Connor,Thomas

Hinckley,Robert

RD (11) Sep 1979

PG (12) 406 Pages

RS (14) FAA-AEE-79-09

RC (20) Unclassified report

NO (21) Supersedes Rept. no. FAA-EQ-78-01 dated Dec 77, AD-A052 790.

AL (22) Availability: Document partially illegible.

DE (23) *Aircraft noise, *Airports, *Computerized simulation

Mathematical models, Runways, Takeoff, Air traffic, Computer programs,
Input, Punched cards, Manuals

AB (27) This document contains the instructions to execute the Integrated Noise
Model (INM), Version 2. The INM is a collection of computer programs
which can calculate the aircraft noise environment in the vicinity of
an airport given certain information on airport location, layout, and
the type and movement of its air traffic.

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AN (1) AD-A079 622/XAG

FG (2) 120500

120600

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) INM Integrated Noise Model Version 2. Programmer's Guide

AU (10) Connor,Thomas

Hinckley,Robert

RD (11) Sep 1979

PG (12) 129 Pages

RS (14) FAA-AEE-79-10

CT (15) DOT-PPA-FA-865

RC (20) Unclassified report

NO (21) Supersedes Rept. no. FAA-EQ-78-03.

AL (22) Availability: Document partially illegible.

DE (23) *Aircraft noise, *Computer programs

Computations, Computers, Models, Computer programming, Magnetic tape, Programmers, Environments, Exposure(General)

ID (25) INM(Integrated Noise Model)

AB (27) This document contains information on the procedures to implement the Integrated Noise Model (INM), Version 2 on to a computer system. The INM is a collection of computer programs which can calculate the aircraft noise environment in the vicinity of an airport. The INM is available from the FAA in the form of a magnetic tape. INM Version 2 supersedes Version 1 which was released in January 1978. This document replace 'FAA Integrated Noise Model, Version 1, Computer Installation Instructions' (Report No. FAA-EQ-78-03). (Author)

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AN (1) AD-A080 065/XAG

FG (2) 050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Toward the Development of a New Selection Battery for Air Traffic Control Specialists.

DN (9) Rept. for Jul 76-Apr 78

AU (10) Boone,James O.

RD (11) Sep 1979

PG (12) 40 Pages

RS (14) FAA-AM-79-21

RC (20) Unclassified report

DE (23) *Psychological tests

Personnel selection, Skills, Air traffic controllers, Trainees, Sampling, Aptitude tests, Performance(Human)

ID (25) Air traffic control specialists, LPN-FAA-AM-C-79-PSY-70

AB (27) In an effort to update and refine the selection battery for air traffic controllers, five experimental tests measuring aptitudes and skills considered important in air traffic work were administered to newly selected Air Traffic Control Specialist (ATCS) trainees on their first day of training at the FAA Academy in Oklahoma City. The testing covered a 21-month period from July 1976 to April 1978 and involved a final sample of approximately 2,500 new trainees. The five experimental tests and the five tests presently used by the Civil Service Commission (CSC) for selecting ATCS trainees were correlated with the averaged laboratory scores from FAA Academy training. These correlations were then employed in an iterative stepwise regression (stepdown procedure). The tests that made a significant contribution in predicting Academy scores were then used to form a composite and the multiple correlation was computed for the old test battery and the new battery. The new composite demonstrated a statistically significant increase in the multiple correlation over the old test battery. Use of the new test battery could result in a saving to the FAA in terms of Academy attrition due to failures. It could also aid in upgrading the quality of ATCS selectees and aid in minimizing human error in air traffic control work. (Author)

AN (1) AD-A081 182/XAG

FG (2) 010300

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Energy Conservation Potential of General Aviation Activity.

RD (11) Sep 1979

PG (12) 49 Pages

RS (14) FAA/EE-79-20

RC (20) Unclassified report

DE (23) *Civil aviation, *Energy conservation

Aircraft, Fuel consumption, Aircraft equipment, Modification, Pilots, Training, Air traffic control systems

ID (25) *General aviation

AB (27) Three approaches for reducing energy consumption were investigated: hardware modification, pilot education, and air traffic control. It is recommended that research into new aircraft engine designs, automatic mixture controls, conventional engine fuel saving improvements, composite materials development, and aerodynamic drag reduction continue and that this hardware be introduced into the fleet when cost, reliability and safety considerations allow. It is further recommended that the pilot awareness and education programs listed above be implemented by the FAA and the general aviation industry; and finally, that the ATC actions listed should be further evaluated to determine whether the anticipated fuel savings justify their implementation. (Author)

AN (1) AD-A084 917/XAG

FG (2) 010200
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT
SYSTEMS

TI (6) FAA Air Traffic Activity, Fiscal Year 1979

AU (10) Carter, Patricia Wilson

RD (11) 30 Sep 1979

PG (12) 241 Pages

RC (20) Unclassified report

AL (22) Availability: Superintendent of Documents, GPO, Washington DC 20402
Stock no. 050-007-00516-4, HC \$6.00. Microfiche furnished to DTIC (and
NTIS) users. Document partially illegible.

DE (23) *AIR TRAFFIC

AIRPORTS, AIR TRAFFIC CONTROL SYSTEMS, APPROACH, AIRCRAFT
LANDINGS,

TAKEOFF, INSTRUMENT FLIGHT, STATISTICAL DATA, TABLES(DATA)

AB (27) This report furnishes terminal and enroute air traffic activity
information of the National Airspace System. The data have been
reported by the FAA-operated Airport Traffic Control Towers (ATCTs),
Air Route Traffic Control Centers (ARTCCs), Flight Service Stations
(FSSs), Combined Station Towers (CS/Ts), International Flight Service
Stations (IFSSs), and Approach Control Facilities. (Author)

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AN (1) AD-A077 189/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) The 1976 Accident Experience of Civilian Pilots with Static Physical
Defects

AU (10) Dille, J. Robert

Booze, Charles F.

RD (11) Aug 1979

PG (12) 9 Pages

RS (14) FAA-AM-79-19

RC (20) Unclassified report

DE (23) *Aviation accidents

Visual defects, Pilots, Blindness, Air Force personnel, Long
range(Distance), Color vision

AB (27) The 1974 and 1975 aircraft accident experiences of civilian pilots with
eight selected static physical defects have been examined and reported
previously. Three categories--blindness or absence of either eye,
deficient color vision with a waiver, and deficient distant vision--had
significantly more accidents than were expected on the basis of
observed-to-expected ratios. However, pilots with these conditions
reported considerably higher median 6-month flight times than did an
active airman population sample and accident airmen without selected
pathology. In 1975 the reported recent and total flying times for all
airmen with these defects were determined and accident rates were
calculated. The rates for airmen with blindness or absence of an eye
were still found to be significantly higher. The contact lens group was
also selected to receive special attention in a study of the 1976
accident data because marginal significance was found on analysis of
the 1975 data and, after 1976, this group will not carry a pathology
code or require a waiver and thus will be difficult to study.
Observed-to-expected ratios for 1976 are 1.91 for deficient color
vision with a waiver, 1.28 for contact lens users, 1.37 for blindness
or absence of either eye, and 1.62 for deficient distant vision. The
accident rates per 100,000 hours of cumulative and last 6 months'
flying experience were significantly greater for contact lens users and
monocular pilots than for the active airman population.

AN (1) AD-A099 965/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY
NJ

TI (6) Miami International Airport Data Package Number 4. Airport Improvement

Task Force Delay Studies.

RD (11) Aug 1979
PG (12) 81 Pages
RC (20) Unclassified report
NO (21) See also AD-A099 966.
DE (23) *Airports
Ground traffic, Aircraft landings, Takeoff, Delay, Runways, Taxiways,
Utilization, Statistical analysis
ID (25) *Miami International Airport

AN (1) AD-A073 176/XAG

**FG (2) 050100
201400**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND**

DEVELOPMENT SERVICE

**TI (6) The Selection of Glide Slope Antenna Patterns for Use in the Frequency
Assignment Process.**

DN (9) Final rept.
AU (10) Lopez, Mark
RD (11) Jul 1979
PG (12) 92 Pages
RS (14) FAA-RD-79-75
RC (20) Unclassified report
DE (23) *Instrument landings, *Glide slope, *Antenna radiation patterns,
*Frequency allocation
Slot antennas, Electric cables, Standardization
ID (25) ILS(Instrument Landing Systems), Endfire antennas, Slotted cables
AB (27) The frequency assignment process is meant to preclude harmful
interference within service volumes. This is done by choosing
frequencies in a manner which provides certain minimum cochannel and
adjacent channel desired to undesired signal ratios at critical points
of the service volume. One of the factors which affects a station's
signal strength in space is its horizontal antenna pattern.
Consequently, the horizontal pattern can have a substantial effect on
the separation required between glide slope frequency assignments. In
some cases, it is desirable to consider the actual antenna patterns
involved rather than using worstcase station separations. This report
has been assembled so that the directivity of the horizontal pattern
may be considered in the assignment process. For each antenna type, a
particular antenna pattern is recommended. (Author)

AN (1) AD-A073 545/XAG

**FG (2) 010500
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY**

TI (6) The States Aviation Forecasting Needs.

DN (9) Staff study
AU (10) Rodwell, Julie F.
RD (11) Jul 1979
PG (12) 53 Pages
RS (14) FAA-AVP-79-7
RC (20) Unclassified report
DE (23) *Airports, *Civil aviation, *Forecasting
Planning, Requirements, Massachusetts
ID (25) States(United States)
AB (27) The purpose of this study was to evaluate the Federal Aviation
Administration's various forecasting activities, discuss where they
could be altered to better meet the States' needs and review where the
States' use of them could be more effective. The report presents one
state's view of some forecasting issues which arise in every state and
includes recommendations, from its point of view, for future steps to
be taken to resolve these issues. (Author)

AN (1) AD-A081 066/XAG

FG (2) 050600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

**TI (6) Performance Standards for Pass-Fail Determinations in the National Air
Traffic Flight Service Station Training Program**

AU (10) Pickrel, Evan W.
RD (11) Jul 1979
PG (12) 48 Pages
RS (14) FAA-AM-79-18
RC (20) Unclassified report
DE (23) *Training, *Performance(Human)
Air traffic controllers, Students, Skills, Standards, Personnel
selection, Test and evaluation, Performance tests, Failure, Variables,
Statistical data, Tables(Data), Inflight, Scoring, Operational
effectiveness
ID (25) Pass fail standards, Flight service station
AB (27) This report describes and documents Pass-Fail procedures for the new
FSS training Program. New types of measures and sets of norms are used

to create standards of performance that students must meet to become eligible for acceptance into the operational facility work force. One type is newly developed FSS Skills Tests, paper-and-pencil simulations of laboratory problems, that were administered to personnel at operational Flight Service Stations across the country for validation, relation to on-the-job performance, and standardization purposes. Other types are the enw academic block tests and graded laboratory problems and skills tests in the Pilot Briefing, Inflight, or Emergency Services positions is subject to failure. A student who fails to achieve a passing score on a final Phase Grade also is subject to failure. The Phase Grade is weighted average of performance on the academic block tests, graded laboratory problems (all positions), and the Pilot Briefing, Inflight and Emergency Services Skills Tests. Norms for each Pass-Fail measure were established on a student population, and scores of the bottom 5% of that normative population on each measure were judged to be unsatisfactory. These were used to establish of cutoff scores for future student populations, which is considered a defensible procedure for Pass-Fail application.

AN (1) AD-A072 006/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Interstimulus Interval as It Affects Temporary Threshold Shift in Serial Presentations of Loud Tones

AU (10) Tobias, Jerry V.

RD (11) Jun 1979

PG (12) 11 Pages

RS (14) FAA-AM-79-16

RC (20) Unclassified report

DE (23) *Auditory perception

Thresholds(Physiology), Loudness, Audio tones, Shifting, Fatigue(Physiology), Noise(Sound), Stimuli, Time intervals, Audiometry, Hearing, Recovery, Losses, Time dependence

ID (25) TTS(Temporary threshold shift), LPN-FAA-AM-E-79-PSY-71

AB (27) Temporary threshold shifts were measured repeatedly during a session in order to determine effects of interstimulus interval (ISI) on the shift. The fatiguing sound was a 3-minute, 110-dB-SPL, 4,000-Hz tone. Immediately following the 3-minute stimulation, Bekesy-audiometric tracings were made for 3 minutes at 5,656 Hz. Then the subject sat quietly for the ISI that was used during that session. The effect of the subject's rest time or time off was compared at two points on the

recovery curve: at 30 seconds and at 2 minutes following the cessation of the fatiguing sound. For susceptible subjects tested with short-duration ISIs, each successive threshold showed a greater shift than the earlier ones for at least four tests. As ISI was increased, improvement seemed not to follow the expected linear form. At some critical value that varies from subject to subject, successive tests no longer differ from each other; each one is similar to a first trial in which no previous exposure to the high-level tone has occurred. For most subjects run under these conditions, the critical ISI value is at least 30 minutes. (Author)

AN (1) AD-A072 691/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Next Generation Airport Surveillance Radar (ASR-()) Definition Study.

DN (9) Final rept. Oct 74-Oct 75.

RD (11) Jun 1979

PG (12) 121 Pages

RS (14) FAA-RD-78-65

RC (20) Unclassified report

DE (23) *Airport radar systems, *Search radar, *Moving target indicators
Radar targets, Aerial targets, Radar cross sections, Radar pulses,
Pulse rate, S band, L band

ID (25) SRTR(Short Range Terminal Radar), ASR(Airport Surveillance Radar)

AB (27) A study group was convened in the Summer of 1974 by the Federal Aviation Administration (FAA) to define the characteristics of the next generation airport surveillance radar (ASR). This was designated as the ASR-(). The study group was comprised of representatives from MIT Lincoln Laboratory, the Johns Hopkins University Applied Physics Laboratory, MITRE, NAFEC, AAF, AAT, ASP, AEM and ARD. The operational requirements developed for the ASR-() include coverage on a small aircraft (one square meter radar cross section) out to 40 nautical miles; up to 15,000 feet altitude; at elevation angles of 0.3 to 30 degrees; in an environment of precipitation clutter, ground clutter, angel clutter, and anomalous propagation; and with a resolution commensurate with a separation standard of 2 nautical miles at a range of 30 nautical miles. Reliability, maintainability, and availability should be equal to that of the ASR-7 and ASR-8. Using the operational requirements, candidate radar systems were defined at four frequencies; VHF (420-450 MHz), L-band (1250-1350 MHz), and S-band (2700-2900 MHz)

and 5¹-band (3500-3700 MHz). The recommended system is the L-band system which has the following characteristics: azimuth beamwidth of 2.25 degrees, PRF of 1100-1360 pps, data rate of 4 sec., instrumented range of 60 nmi and a pulse width of 1.0 usec. (Author)

AN (1) AD-A074 881/XAG

**FG (2) 010300
230600**

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL

INST

TI (6) Evaluation of Seating and Restraint Systems Conducted during Fiscal Year 1978

**AU (10) Chandler, Richard F.
Trout, Edwin M.**

RD (11) Jun 1979

PG (12) 229 Pages

RN (18) FAA-AM-79-17

RC (20) Unclassified report

DE (23) *Aviation safety, *Aircraft seats, *Survival(Personnel)

Test equipment, Simulation, Crashes, Rocket sleds, Anthropometry, Aircraft, Passengers, Safety

ID (25) SOMLA sled tests

AB (27) This report summarizes the results of test programs conducted by the Protection and Survival Laboratory to investigate the performance of prototype or operational seating and restraint systems relative to their ability to provide protection against crash injury and to validate the performance of the FAA Seat Occupant Model: Light Aircraft (SOMLA). Most of the data in this report were previously presented as the final quarterly progress report for Task AM-B-78-PRS-47 and are subject to additional evaluation or change on review, conduct of additional testing, or receipt of additional facts. (Author)

AN (1) AD-A075 548/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF PUBLIC AFFAIRS

TI (6) Guide to Federal Aviation Administration Publications.

RD (11) Jun 1979

PG (12) 73 Pages

RS (14) FAA-APA-PG-2

RC (20) Unclassified report

DE (23) *Civil aviation, *Commercial aviation, *Aeronautics

Reports, Indexes, Regulations, Standards, Aviation safety, Aviation personnel, Air traffic control systems, Airports, Airworthiness, Commercial aircraft

AB (27) The FAA publishes numerous documents dealing with a variety of subjects-from regulations on aviation safety to career guidance materials designed to enrich aviation curricula and promote interest in aviation careers. Many of these publications are of interest to the general public as well as to the aviation community. Many of them are free on request. We hope this guide makes it easier for the public to gain access to them and to the civil aviation-related publications issued by other Federal agencies.

AN (1) AD-A079 315/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Wind Shear Hazard Definition for a Wide Body Jet.

DN (9) Final rept.

AU (10) Schlickemaier, Herbert W.

RD (11) Jun 1979

PG (12) 83 Pages

RS (14) FAA-RD-79-90

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *Jet transport planes, *Wind shear

Hazards, Mathematical prediction, Computerized simulation

ID (25) Wide body transports

AB (27) An approach to defining the hazards to a wide body jet caused by low level wind shear is presented. Hazard envelopes are used to define the limitations of aircraft with specific configurations and gross weights, proceeding within aircraft capabilities through wind shear conditions. A computer program is developed to simulate the flight dynamics and automatic flight control system (AFCS) of a three engine jumbo jet following a 3 deg. glideslope during final approach. Wind shear profiles representative of actual encounters are used. The simulation uses both autopilot and autothrottle. Analyses presented herein represent an initial effort to define specific wind shear conditions that pose hazards to aircraft. Parameter values are analyzed for each of four categorized wind shear environments and performance scores achieved on computer simulations are assigned for each of the four wind shear types. The most severe situations that can be accommodated by a

jumbo tri-jet with current configuration are described for each of the four wind shear types. Conservative controlability criteria is applied and a hazardous condition is presumed to exist when the control action demanded and provided by the simulator exceeds the control limits of the actual aircraft, or when the airspeed and/or touchdown dispersion exceed limit values. Definition of these criteria provide a basis for the formulation of procedures allowing aircraft to anticipate and avoid hazardous wind shear conditions. (Author)

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AN (1) AD-A070 299/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Development of Electrophysiological Indices of Neurological Toxicity for Organophosphate Pesticides and Depressant Drugs

AU (10) Revzin,A. M.

RD (11) May 1979

PG (12) 18 Pages

RS (14) FAA-AM-79-15

RC (20) Unclassified report

DE (23) *Toxicity, *Drugs, *Pesticides

Neurology, Environmental tests, Risk, Behavior, Toxic agents, Physiological effects, Visual perception, Exposure(Physiology), Organic phosphorus compounds, Amphetamines, Chlorpromazine, Ethanols

ID (25) Imipramine, Clonidine, Chlorpheniramine maleate, Diphenylhydramine

AB (27) Accurate control of eye movements and rapid detection of unexpected events in the periphery of the visual field are critically important in the aviation environment. We have studied the effects of certain drugs and environmental pollutants on brain mechanisms controlling these visual reflexes, using single nerve cell recordings in animal model systems. Most agents studied deleteriously affected reflex functions at extremely low doses. This was especially true for organophosphate pesticides, related cholinergic compounds, and ethyl alcohol. Some drugs, such as imipramine and amphetamine, seemed to have little deleterious effect. Overall, the results suggest that some drugs and environmental pollutants can impair visual functions at doses not normally considered hazardous, and thus indicate the need for extreme caution in evaluating the safety margins of such materials in aviation medicine.

AN (1) AD-A070 779/XAG

FG (2) 010600

040100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Federal Aviation Administration - Florida Institute of Technology Workshop on Grounding and Lightning Technology Held on 6 - 8 March 1979, Melbourne, Florida. Supplement IA.

DN (9) Final rept.

RD (11) May 1979

PG (12) 99 Pages

RS (14) FAA-RD-79-6-SUPPL-1A

RC (20) Unclassified report

NO (21) Supersedes rept. no. FAA-RD-79-6-SUPPL-1. Supplement 1A to report dated Mar 79, AD-A065 410.

DE (23) *Electrical grounding, *Lightning

Aviation safety, Protective equipment, Electronic equipment, Aerospace systems, Avionics, Aircraft, Position finding, Tracking, Civil aviation, Flameout

ID (25) Lightning protection

AB (27) Partial contents: Lightning Effects on General Aviation Aircraft; A New Approach to Lightning Positioning and Tracking; Design, Development and Fabrication of Devices for the Protection of Electronic Equipment against Lightning; Lightning Fatalities--Can They be Prevented; and Lightning Test Waveforms and Techniques for Aerospace Vehicles and Hardware.

AN (1) AD-A072 793/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Helicopter Air Traffic Control Operations.

DN (9) Final rept.

RD (11) May 1979

PG (12) 114 Pages

RS (14) FAA/RD-78-150

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Helicopters

Plan position indicators, Instrument flight, Approach, Flight paths, Low altitude, Terminal flight facilities, Remote areas, Offshore, Urban

areas, Fixed wing aircraft, Separation, Short takeoff aircraft, Mexico Gulf, Integrated systems

ID (25) Intercity flights

AB (27) The problems which inhibit the integration of IFR operations in the ATC system were examined, and recommendations were made to resolve these problems. Revisions in TERPS criteria and in the ATC Handbook are necessary to minimize interference between fixed-wing and rotary-wing aircraft. The use of 2 nm radar separation between IFR helicopters in terminal areas is recommended to increase capacity by reducing the time interval between helicopter approaches to a value consistent with the time interval between fixed-wing approaches. Helicopters have a special need for low-altitude RNAV capability and the ATC system needs to be better adapted to handle the random route traffic that helicopters will generate in exploiting their special capabilities. To this end, it is recommended that the FAA develop software to call up and display, on the ATC PPI, random waypoints and connecting routes, on an as-needed basis. Helicopters operating offshore and in remote areas are often beyond the coverage of surveillance radar, thus requiring the use of procedural control. They also operate below the coverage of VHF communications and VOR/DME, requiring alternate types of systems, several of which are recommended. The need for special controller training in procedural control, and in helicopter characteristics and limitations was made apparent during the study. (Author)

AN (1) AD-A073 484/XAG

FG (2) 010500
130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Reflection Cracking of Bituminous Overlays for Airport Pavements; A State of the Art.

DN (9) Final rept.

AU (10) McLaughlin, Aston L.

RD (11) May 1979

PG (12) 93 Pages

RS (14) FAA-RD-79-57

RC (20) Unclassified report

DE (23) *Pavements, *Airports

Runways, Cracking(Fracturing), Civil engineering, Experimental design, Asphalt, State of the art, Structural analysis, Construction materials, Overlays

ID (25) *Reflection cracking, LPN-FAA-082-420

AB (27) This report surveys current methods and practices pursued by various pavement authorities in an effort to reduce the incidence of reflection cracking of bituminous overlays. The most common theoretical, analytical and laboratory efforts in this connection are also presented. Latest information concerning these measures and their successes, failures and uncertainties is stated from interviews with cognizant personnel in the field, and at universities and government research agencies. Other information is presented from construction records, site visits and published material. The findings in this research effort are that the state of the art in preventing reflection cracking of bituminous overlays, excluding a few institutional efforts, has not developed along systematic lines and, to date, there is no methodology by which the degree of effectiveness of any method in place can be predicted under a variety of conditions. Also, field experimentation has not yielded reproducible results partly because of lack of good experimental design and statistical methods, adequate quality control and documentation of all significant variables. (Author)

AN (1) AD-A081 465/XAG

FG (2) 010500
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Community Involvement Manual.

RD (11) May 1979

PG (12) 101 Pages

RS (14) FAA-EE-79-06

RC (20) Unclassified report

DE (23) *Airports, *Community relations

Public relations, Symposia, Mass media

ID (25) Meetings

AB (27) One of the greatest problems facing aviation today is the environmental and social impacts of airports on nearby communities. In order to create a climate which will allow the maintenance or expansion of services needed to meet future aviation demand, airports must be seen as concerned neighbors by the people who live near them. The challenge is to solve the problems of air pollution, aircraft noise, groundside traffic congestion, and the many other impacts associated with airports without compromising the highest degree of safety and without detracting from the management of the air navigation system.

AN (1) AD-A070 786/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
POLICY AND PLANS
TI (6) IFR Aircraft Handled: Forecast by Air Route Traffic Control Center, Fiscal Years 1979-1990
AU (10) Hannan, Bernard
RD (11) Apr 1979
PG (12) 54 Pages
RS (14) FAA-AVP-79-1
RC (20) Unclassified report
DE (23) *AIR TRAFFIC, *INSTRUMENT FLIGHT
AIR TRAFFIC CONTROL SYSTEMS, FORECASTING, MATHEMATICAL MODELS
ID (25) Air route traffic control centers
AB (27) The report presents the forecasts of Instrument Flight Rule (IFR) aircraft handled by FAA air route traffic control centers (ARTCC). It serves as a base for the FAA planning and budget process in determining future requirements for facilities, equipment and manpower. The forecasts show that total aircraft handled will increase from 28.1 millions in FY 1978 to 45.6 million in FY 1990. These national total numbers along with those for the intervening years are broken down by FAA region and by each air route traffic control center in this report.
(Author)

AN (1) AD-A110 352/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION
SECURITY
TI (6) Effectiveness of the Civil Aviation Security Program.
DN (9) Semi-annual rept. no. 9, 1 Jul-31 Dec 78.
RD (11) 25 Apr 1979
PG (12) 42 Pages
RS (14) FAA-ACS-82-9
RC (20) Unclassified report
NO (21) Report to Congress.
DE (23) *Security, *Civil aviation, *Aviation safety
Commercial aviation, Threats, Sabotage, Aircraft hijacking, Bombs, Explosives, Weapons, Detectors, Passengers, Terrorism, Prevention
AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security

incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A065 410/XAG
FG (2) 010300
040100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) Federal Aviation Administration - Florida Institute of Technology Workshop on Grounding and Lightning Technology Held on 6-8 March 1979, Melbourne, Florida.
DN (9) Final rept.
RD (11) Mar 1979
PG (12) 157 Pages
RS (14) FAA-RD-79-6
RN (18) GIDEP-E146-1785
RC (20) Unclassified report
DE (23) *ELECTRICAL GROUNDING, *LIGHTNING
AIRCRAFT, PROTECTIVE EQUIPMENT, MEASUREMENT, ELECTRONIC EQUIPMENT,
ELECTRICAL EQUIPMENT, AVIONICS
ID (25) *Lightning protection
AB (27) A state-of-art review and background research reveals a number of opinions as to the preferred techniques for providing grounding and lightning protection of electronic equipment and systems. The Systems Research and Development Service and the Flight Standards Service of the Federal Aviation Administration in conjunction with the Florida Institute of Technology conducted a workshop which brought together distinguished experts in the fields of grounding, lightning phenomenology and transient protection. This year the format of the workshop was expanded to include the effects of direct strikes and induced lightning on aircraft and their contents as well as lightning detection and warning systems. This report contains the papers presented at the workshop. A supplementary report will be issued containing the papers which were not available for printing before the workshop. (Author)

AN (1) AD-A067 826/XAG
FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) A Comparison of the Job Attitudes and Interest Patterns of Air Traffic and Airway Facility Personnel

AU (10) Smith, Roger C.

RD (11) Mar 1979

PG (12) 13 Pages

RS (14) FAA-AM-79-11

RC (20) Unclassified report

DE (23) *Attitudes(Psychology), *Job satisfaction, *Air traffic controllers Patterns, Measurement, Questionnaires, Motivation, Ratings

AB (27) Air traffic control specialists (ATCSs) and airway facility technicians (AFTs) were compared on measures of job attitudes and interests. A total of 792 ATCSs and 2,366 AFTs completed the Strong Vocational Interest Blank (SVIB) and questionnaires concerning job satisfaction and job attitudes. Both groups indicated high overall job satisfaction and general agreement about areas of job satisfaction and dissatisfaction. However, ATCSs reported more satisfaction than AFTs from various aspects of the work itself and from salary, while AFTs were more satisfied with responsibility, working conditions, and Civil Service retirement. The AFTs were more favorable to management than ATCSs. On the SVIB, ATCSs had higher scores than AFTs on scales concerned with interpersonally oriented vocations (e.g., social service, sales) and lower scores on technical-scientific occupational scales. The findings suggest that these two employee groups have much in common with respect to their attitudes toward work while at the same time having certain discriminable characteristics that have implications for both personnel and motivational programs. (Author)

AN (1) AD-A068 020/XAG

FG (2) 050800

060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Visual Search Performance during Simulated Radar Observation with and without a Sweepline

AU (10) Thackray, Richard I.

Toughstone, R. Mark

RD (11) Mar 1979

PG (12) 18 Pages

RS (14) FAA-AM-79-12

RC (20) Unclassified report

DE (23) *Searching, *Vision, *Eye movements

Performance(Human), Search radar, Display systems, Air traffic control systems, Automation, Attention, Vigilance

ID (25) LPN-FAA-AM-C-78/79-PSY-68

AB (27) A study was conducted to determine whether or not the presence or absence of a radar sweepline influences attentional processes and, hence, the speed with which critical stimuli can be detected. The visual display was designed to approximate an advanced, highly automated air traffic control radar display containing computer-generated alphanumeric symbols. Twenty-eight men and women, paid volunteers with no previous air traffic controller experience, were tested over a 2-hour session with half of the subjects assigned to the sweep condition and half to the no-sweep condition. Sixteen targets appeared on the screen at all times, with 10 signals (a designed change in the alphanumerics) randomly presented during each 1/2-hour of the test session. Mean detection latencies, long detection times, and missed signals all increased significantly over the task session. Although the no-sweep appeared to be generally superior to the sweep condition in all measures of detection efficiency, none of the differences was significant. Concomitantly recorded measures of saccadic eye movements revealed a pattern of change in mean fixation duration which paralleled the patterns of change in performance during the task session. However, as with performance, mean fixation durations for the sweep and no-sweep conditions did not differ, nor were individual differences in scanning activity related to performance. Possible reasons for the lack of relationship between scanning activity and performance are discussed. (Author)

AN (1) AD-A068 171/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND

ENERGY

TI (6) Environmental Data Bank. Volume I. User's Manual.

RD (11) Mar 1979

PG (12) 48 Pages

RS (14) FAA-AEE-79-01-VOL-1

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A068 172.

DE (23) *Airports, *Environmental protection

Data bases, United States, Civil aviation, Land use, Noise pollution, Regulations, Legislation, Noise reduction

AB (27) The Environmental Data Bank (EDB) represents an effort to compile a comprehensive listing of environmentally-oriented data within one convenient source. The data were collected with the aid of the FAA Regional Offices and include airport-specific information regarding the existence of such things as land acquisition programs or other such noise control actions in effect at each of the U.S. airports listed as of March 1979. The individual airport data themselves are arranged in the alphabetical order of the airport's 'location indicator' (LOCID), by FAA region. These data may not reflect all U.S. airports having significant environmental information, as we have only indicated those data here that have been reported to us. This EDB may be useful by providing a sense of the extent to which environmentally-related activities have affected approximately 475 of our Nation's airports. Briefly, the EDB is organized into four individual volumes: Volume I, User's Manual, gives detailed information about the content and use of the data base.

AN (1) AD-A068 172/XAG

**FG (2) 010500
120500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Environmental Data Bank. Volume II. Systems Manual.

RD (11) Mar 1979

PG (12) 59 Pages

RS (14) FAA-AEE-79-01-VOL-2

RC (20) Unclassified report

NO (21) See also Volume 4, AD-A068 173.

DE (23) *Airports, *Environmental protection

Data bases, United States, Civil aviation, Land use, Noise pollution, Noise reduction, Regulations, Legislation, Computer programs, Instruction manuals, Data management

ID (25) User manuals, COBOL programming language

AB (27) The Environmental Data Bank (EDB) represents an effort to compile a comprehensive listing of environmentally-oriented data within one convenient source. The data were collected with the aid of the FAA Regional Offices and include airport-specific information regarding the existence of such things as land acquisition programs or other such noise control actions in effect at each of the U.S. airports listed as of March 1979. Volume II, Systems Manual, contains a description of the system and programs that support the use and management of the data within the file.

AN (1) AD-A068 173/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Environmental Data Bank. Volume IV. Supplemental Information Manual.

RD (11) Mar 1979

PG (12) 516 Pages

RS (14) FAA-AEE-79-01-VOL-4

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A068 171.

DE (23) *Airports, *Environmental protection

Data bases, United States, Civil aviation, Land use, Noise pollution, Noise reduction, Regulations, Legislation

AB (27) The Environmental Data Bank (EDB) represents an effort to compile a comprehensive listing of environmentally-oriented data within one convenient source. The data were collected with the aid of the FAA Regional Offices and include airport-specific information regarding the existence of such things as land acquisition programs or other such noise control actions in effect at each of the U.S. airports listed as of March 1979. FAA Form 1050-5 (Volumes I and II, Appendix A) summarizes those kinds of data which may be listed (if applicable) at each airport. Volume IV, Airport Supplemental Information Manual, contains supplemental data of special environmental conditions and/or problems included in the base base.

AN (1) AD-A068 174/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) International Environmental Data Bank.

RD (11) Mar 1979

PG (12) 135 Pages

RS (14) FAA-AEE-79-02

RC (20) Unclassified report

NO (21) See also AD-A068 171.

DE (23) *Airports, *Environmental protection

Data bases, Foreign, Civil aviation, Land use, Noise pollution, Regulations, Legislation, Noise reduction

AB (27) The Environmental Data Bank (EDB) represents an effort to compile a

comprehensive listing of environmentally-oriented data within one convenient source. The data were collected with the aid of the FAA Regional Offices and include airport-specific information regarding the existence of such things as land acquisition programs or other such noise control actions in effect at each of the U.S. airports listed as of March 1979. This EDB may be useful by providing a sense of the extent to which environmentally-related activities have affected approximately 475 of our Nation's airports. Consistent with the format and use of the U.S. airports' EDB, an International Environmental Data Bank (IEDB) was developed through information provided by the International Civil Aviation Organization (ICAO). This international data, as documented in the IEDB volume, contains airport-specific information for approximately 110 foreign airports.

AN (1) AD-A068 535/XAG

FG (2) 060500
061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Propranolol on Time of Useful Function (TUF) in Rats

AU (10) Higgins, E. A.

McKenzie, J. M.

Funkhouser, G. E.

Mullen, S. R.

RD (11) Mar 1979

PG (12) 14 Pages

RS (14) FAA-AM-79-10

RC (20) Unclassified report

DE (23) *Decompression, *Hypoxia, *Altitude sickness, *Aviation medicine

Rats, Medical research, Experimental data, Aviation safety, Oxygen,

Hemoglobin, Tolerances(Physiology), Drugs

ID (25) *Propranolol, *TUF(Time of Useful Function), LPN-FAA-AM-A-78-PHY-108

AB (27) To assess the effects of propranolol on tolerance to rapid decompression, a series of experiments was conducted measuring time of useful function (TUF) in rats exposed to a rapid decompression profile in an altitude chamber. In other experiments TUF was measured for rats exposed to an oxygen/nitrogen gas mixture which produced a hypoxic condition equivalent to that in the decompression experiments. The findings were: (1) Rats become less tolerant to hypoxia of an onset rate comparable to that of rapid decompression when given propranolol, and this intolerance is further exacerbated by an increase in physical exertion. (2) Younger animals are more susceptible to this type of

hypoxia, but propranolol has no greater effect on hypoxia tolerance in younger animals. (3) None of the reduced tolerance can be attributed to a shift in the oxyhemoglobin dissociation curve. In rats the curve is shifted slightly to the left, whereas in man there is a reported shift to the right. Because propranolol impairs tolerance to hypoxia in experimental animals, it is important to assess its effects on human tolerance. (Author)

AN (1) AD-A068 581/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Selection on Air Traffic Control Specialists: Two Studies Demonstrating Methods to Insure an Accurate Validity Coefficient for Selection Devices

AU (10) Boone, James O.

Lewis, Mary A.

RD (11) Mar 1979

PG (12) 12 Pages

RS (14) FAA-AM-79-14

RC (20) Unclassified report

DE (23) *Air Traffic Controllers

Recruiting, Personnel selection, Statistical analysis, Performance tests, Data bases, Validation

ID (25) LPN-FAA-AM-C-78-PSY-70, LPN-FAA-AM-C-78-PSY-66

AB (27) There are several conditions that can influence the calculation of the statistical validity of a test battery such as that used to selected Air Traffic Control Specialists. Two conditions of prime importance to statistical validity are recruitment procedures and the accuracy of the data base. The recent edition (1978) of the Federal Uniform Guidelines on Employee Selection Procedures places considerable emphasis on recruitment practices and their effect on validity. In the first of two studies, Monte Carlo techniques were employed to demonstrate the frequently overlooked effect that recruitment procedures can have on the validity coefficient. It was shown how highly specific recruitment results in a more homogenous group of applicants which produces a small applicant group variance on the selection test scores. It was further shown how a small applicant group variance considerably reduces the validity coefficient when the coefficient is corrected for selection effects; commonly termed restriction in range. This paper suggests a procedure that eliminates this recruitment problem and results in compliance with the Uniform Guidelines. The second study describes a

statistical procedure to use when it is necessary to eliminate erroneous data. The procedure employs the notions of statistical distance and probability to identify data that has an extremely small likelihood of belonging to the population of the remaining data set.
(Author)

AN (1) AD-A068 836/XAG

FG (2) 010500

130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Environmental Data Bank (EDB). Volume III. Airport Environmental Data Manual.

RD (11) Mar 1979

PG (12) 996 Pages

RS (14) FAA-AEE-79-01-VOL-3

RC (20) Unclassified report

NO (21) See also Volume 4, AD-A068 173.

AL (22) Availability: Document partially illegible.

DE (23) *Airports

United States, Data bases, Environmental management, Runways, Aircraft noise, Noise reduction, Statistical data, Computer printouts

AB (27) The Environmental Data Bank (EDB) represents an effort to compile a comprehensive listing of environmentally-oriented data within one convenient source. The data include airport-specific information regarding the existence of such things as land acquisition programs or other such noise control actions in effect at each of the U.S. airports listed as of March 1979. Volume III presents site-specific information for each airport included in the data base. In addition to the computer readout provided for each airport, the following are included: (1)

Diagram of the runway configuration of the airport; (2) Noise sensitive areas located within either a 5 or a 10-mile radius of the airport; and (3) A section giving basic airport statistics.

23

AN (1) AD-A070 285/XAG

FG (2) 230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Oxygen Equipment and Rapid Decompression Studies

AU (10) McFadden, E. B.

RD (11) Mar 1979

PG (12) 120 Pages

RS (14) FAA-AM-79-13

RC (20) Unclassified report

DE (23) *Oxygen equipment

Life support systems, Decompression, High altitude, Aviation safety, Physiological effects, Aviation medicine, Respiration, Oxygen consumption

ID (25) LPN-FAA-AM-B-77-PRS-13

AB (27) This is a collection of reports of evaluations of the protective capability of various oxygen systems at high altitude and during rapid decompression. Results of these studies were presented at scientific meetings and/or published in preprints or proceedings with limited distribution. (Author)

AN (1) AD-A074 532/XAG

FG (2) 010301

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Noise Levels and Flight Profiles of Eight Helicopters Using Proposed International Certification Procedures.

DN (9) Final rept.

AU (10) Newman, J. Steven

Rickley, Edward J.

RD (11) Mar 1979

PG (12) 298 Pages

RS (14) FAA-AEE-79-03

RC (20) Unclassified report

NO (21) Supersedes Preliminary report dated 29 Aug 78 and Addendum to the Preliminary report dated 8 Sep 78.

DE (23) *Helicopters, *Aircraft noise, *Aircraft engine noise

Flight, Profiles, Noise(Sound), Standards, Standardization, International, United States, France, West Germany, Models, Takeoff, Data acquisition, Data processing, Measurement, Regression analysis

ID (25) EPNL(Effective Perceived Noise Level), PUMA aircraft, Gazelle aircraft, MBB-BO-105 aircraft, CH-53 aircraft

AB (27) This document reports the findings of helicopter noise tests conducted at the FAA National Aviation Facility Experimental Center (nafec), located in Atlantic City, New Jersey. The tests were conducted with the following objectives: first, determine the feasibility of a takeoff

procedure for helicopter noise certification; second, establish a data base of helicopter noise levels to be used in defining noise standards; third, acquire helicopter acoustical spectral data for a variety of acoustical angles for use in the FAA Integrated Noise Model. This report addresses the first two objectives.

AN (1) AD-A099 964/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Miami International Airport. Data Package Number 3. Airport Improvement Task Force Delay Studies.

RD (11) Mar 1979

PG (12) 120 Pages

RC (20) Unclassified report

NO (21) See also Data Package No. 4, AD-A099 965.

DE (23) *Airports

Ground traffic, Aircraft landings, Takeoff, Delay, Runways, Taxiways, Utilization, Statistical analysis

ID (25) *Miami International Airport

AN (1) AD-B041 518/XAG

FG (2) 090100

140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) A Study of Integrated Circuit Mounting Techniques for Improved Reliability and Maintainability of FAA Airway Facility Systems.

DN (9) Final rept. 15 Apr-15 Oct 77

AU (10) Erickson, John

Townes, William

RD (11) Mar 1979

PG (12) 24 Pages

CT (15) DOT-FA77WAI-746

PJ (16) 1L162705AH94

TN (17) R1

RN (18) DELET-TR-79-7

RC (20) Unclassified report

AL (22) Distribution limited to U.S. Gov't. agencies only; Test and Evaluation;

Mar 79. Other requests for this document must be referred to Commander,

Army Electronics Research and Development Command, Attn: DELET-IR. Fort

Monmouth, NJ 07703.

DE (23) *INTEGRATED CIRCUITS, *PRINTED CIRCUIT BOARDS, *TEST EQUIPMENT

NONSTANDARD PARTS, LIGHTNING, INSTRUMENT LANDINGS, FAILURE(ELECTRONICS), MAINTAINABILITY, RELIABILITY
ID (25) Airway facilities, Printed circuit board sockets, Wirewrapped boards, Circuit board sockets, Multilayer boards, Board sockets, Socketed integrated circuits, Benign environments, BITE(Built in Test Equipment), ASH94, PE62705A

DL (33) 03

AN (1) AD-A067 925/XAG

FG (2) 010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Aircraft Separation Assurance Technical Developments.

DN (9) Technical paper.

RD (11) Feb 1979

PG (12) 30 Pages

RS (14) FAA-EM-79-2(TP)

RC (20) Unclassified report

DE (23) *Air traffic control systems

Avionics, Aviation safety, Collision avoidance, Airport radar systems,

Air control centers, Air traffic control terminal areas, Beacons, Air

space, Civil aviation

ID (25) ASA(Aircraft Separation Assurance), CAS(Conflict Alert Service),

ATARS(Automatic Traffic Advisory and Resolution Service), BCAS(Beacon

Collision Avoidance System), DABS(Discrete Address Beacon System)

AB (27) It is the purpose of this paper to provide background on the portion of

the FAA plan that relates to the technical systems needed for aircraft

separation assurance and future avionics requirements. This discussion

will deal with the technology developments and the rationale for the

actions taken and proposed. (Author)

AN (1) AD-A069 326/XAG

FG (2) 061000

140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) A Lower Body Negative Pressure Box for +Gz Simulation in the Upright Seated Position

AU (10) Lategola, Michael T.

Trent, Charles C.

RD (11) Feb 1979

PG (12) 10 Pages

RS (14) FAA-AM-79-8

RC (20) Unclassified report

DE (23) *Stress(Physiology), *Test equipment

Gravity, Tolerances(Physiology), Operation, Simulation, Pilots, Civil aviation

ID (25) LPN-AM-A-77-PHY-99

AB (27) The cost of purchasing and operating a human centrifuge is substantial.

Lower body negative pressure (LBNP) is considered an acceptable experimental substitute for the +Gz stress of the centrifuge. Since civil aviation pilots are usually subjected to +Gz stress in an upright seated position, an upright seated version of the supine LBNP box was developed. In this version, a negative pressure of -40 mm Hg is considered the equivalent of a +2 Gz stress. This box has successfully withstood a test pressure of -120 mm Hg. Pedal ergometry within the box is easily accomplished. The box was anthropometrically engineered to accommodate a human height range of 160-195 cm. Locating the box within an altitude chamber allows the application of LBNP at any level of chamber altitude. The total cost of fabrication is approximately \$500.

AN (1) AD-A069 372/XAG

FG (2) 010200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Injuries in Air Transport Emergency Evacuations

AU (10) Pollard, Donell W.

RD (11) Feb 1979

PG (12) 33 Pages

RS (14) FAA-AM-79-6

RC (20) Unclassified report

DE (23) *AVIATION ACCIDENTS

EVACUATION, WOUNDS AND INJURIES, STATISTICAL ANALYSIS, AVIATION SAFETY,

EMERGENCIES, AIR TRANSPORTATION, SAFETY EQUIPMENT, AVIATION MEDICINE

ID (25) *Aircraft evacuation injuries, LPN-FAA-AM-B-78-PRS-22

AB (27) Twelve air transport evacuations are reviewed. Injuries are discussed with emphasis on configurational and procedural contributing factors.

Recommendations and information about possible methods of reducing

injuries are provided. (Author)

AN (1) AD-A069 708/XAG

FG (2) 050600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Aircrew Performance Enhancement and Error Reduction (APEER).

DN (9) Technical paper.

RD (11) 20 Feb 1979

PG (12) 9 Pages

RS (14) FAA-EM-79-3(TP)

RC (20) Unclassified report

DE (23) *Aviation safety, *Performance(Human), *Flight crews

Error analysis, Aviation accidents, Systems analysis, Systems engineering, Reliability, Systems management, Computer aided instruction

ID (25) APEER(Aircrew Performance Enhancement and Error Reduction)

AB (27) Historically, pilot error is involved as a factor in approximately 60%

of air carrier and 88% of general aviation fatal accidents. Pilot error, however, is only a symptom of an underlying disease in the design and operation of the aviation system, including the aircraft, the ATC system, and institutional factors affecting aviation. In order to minimize errors committed in the cockpit, it is necessary to intensify our efforts to see that human capabilities and limitations are an integral consideration in the design and implementation of our future aviation systems. The (APEER) program is a systems engineering approach to pilot error problems, which complements the human-oriented research that is conducted by the FAA's Office of Aviation Medicine.

The objectives of the program are to develop information and principles of design of cockpit and ground systems which: (1) induce the minimum number of errors by designing for maximum man/machine compatibility, and (2) resist the occurrence of chains of events leading to catastrophic results by designing in error tolerance. An additional objective is to build up additional internal FAA expertise in the human factor area in order to better support FAA regulatory and other safety functions in this critical area. (Author)

AN (1) AD-A065 448/XAG

FG (2) 060400

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Sex and Race Determination of Crania by Calipers and Computer: A Test of the Giles and Elliot Discriminant Functions in 52 Forensic Cases

AU (10) Snow, Clyde C.

Hartman, Steve

Giles, Eugene

Young, Fontaine A.

RD (11) Jan 1979

PG (12) 19 Pages

RS (14) FAA-AM-79-2

RC (20) Unclassified report

DE (23) *Discriminate analysis, *Anthropology

Race(Anthropology), Test methods, Skeleton, Sex, Computer aided instruction, Minicomputers

ID (25) LPN-FAA-AM-B-77-PRS-28

AB (27) The Giles and Elliot discriminant functions diagnosing sex and race from cranial measurements were tested on a series of forensically examined crania of known sex and race. Of 52 crania of known sex, 46 (88%) were correctly diagnosed. Racial diagnoses were correct in 30 (71%) of 42 crania of known race. Analysis of the facial data indicates that most of the errors resulted from the misclassification of American Indian crania as White or Negro. This suggests that the temporally remote and geographically limited prehistoric Indian crania used in developing the functions do not provide a data base representative of the present-day U.S. American Indian population. Cranial size, age at death, and certain pathological conditions altering cranial form can also contribute to misdiagnoses of sex and /or race by the function. We conclude, that despite some shortcomings, the Giles and Elliot discriminant functions provide a useful tool in forensic anthropology. (Author)

AN (1) AD-A065 461/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) SRDS Technical Program Document. Fiscal Year 1979. Research and Development Approved Projects.

RD (11) Jan 1979

PG (12) 231 Pages

RS (14) FAA/RD-79-2

RC (20) Unclassified report

DE (23) *Civil aviation, *Air traffic control systems, *Navigation aids

Automation, Navigation, Weather, Landing aids, Aircraft landings, Aviation safety, Airports, Commercial aviation, Radar, Beacons, Communication and radio systems, Reports

AB (27) This document contains research and technology resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved projects. These resumes highlight the requirement, technical objective, approach, milestones scheduled for accomplishment, and end item products. Engineering and development topics include: Radar, Beacon, Navigation, Airborne separation assurance, Communications, Approach and landing systems, ATC systems command center automation, Enroute control, Flight service stations, Terminal/Tower control, Weather, and Aircraft safety.

AN (1) AD-A066 113/XAG

FG (2) 050800

060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Acoustic Signals for Emergency Evacuation

AU (10) Tobias, Jerry V.

Kidd, Gerald D., Jr

RD (11) Jan 1979

PG (12) 26 Pages

RS (14) FAA-AM-79-5

RC (20) Unclassified report

DE (23) *Hearing, *Speech

Acoustic signals, Masking, Emergencies, Discrimination, Evacuation

ID (25) LPN-FAA-AM-D-79-PSY-73, LPN-FAA-AM-B-74/75/76/77/78-PSY-50

AB (27) Previous studies of binaural hearing suggested that speech sounds are less resistant to masking than are nonspeech sounds; experiments demonstrated that, when the nonspeech sounds are given a message to convey, they act more like speech. Earlier research showed that when subjects are deprived of vision, their walking behavior can be changed by presenting them with binaurally localizable signals, and so tests were run using speech recordings at the exits of the FAA Civil Aeromedical Institute's emergency evacuation simulator. The voices called out, Exit here, This way, and This way out, and people who had the opportunity to listen to them in an evacuation situation in which the illumination level was quite low and the subjects' vision was

further obscured as if by smoke or dust performed better than people who did not hear the sounds. (Author)

AN (1) AD-A066 220/XAG

FG (2) 050600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL INST

TI (6) Pilot Performance during Simulated Approaches and Landings made with Various Computer-Generated Visual Glidepath Indicators

AU (10) Lewis, Mark F.

Mertens, Henry W.

RD (11) Jan 1979

PG (12) 58 Pages

RN (18) FAA-AM-79-4

RC (20) Unclassified report

DE (23) *Pilots, *Performance(Human), *Flight simulation

Flight simulators, Approach indicators, Aircraft landings, Glide path systems, Computer aided instruction, Computer graphics, Vision, Night flight, Indicators

AB (27) Two simulator experiments were conducted to quantify the effectiveness, in terms of pilot performance, of four different visual glidepath indicator systems in the severely reduced nighttime visual environment often referred to as the 'black hole'. A Convair 580 aircraft simulator was used with a computer-generated-image visual system attached for visual simulation of the airport scene. In Experiment I, four groups of six pilots flew simulated night approaches both with and without simulated glidepath indicators. Each group used a different type of indicator, either the standard Red/White 2-bar or 3-bar VASI system, the Australian T-VASIS, or a British experimental system (PAPI); all were designed to define a 3 degrees glidepath. All indicators greatly reduced deviations from the 3 degrees glidepath reference. Performance was best with the T-VASIS and decreased with the 3-bar VASI, PAPI, and 2-bar VASI in that order, but differences between T-VASIS, 3-bar VASI, and PAPI were not statistically significant. Approaches flown without the ground-based glidepath indicators tended to be low and were extremely variable in this simulation where only runway lighting provided vertical guidance information. Experiment II compared the T-VASIS and 2-bar VASI regarding observing behavior in three pilots who made approaches with both systems. Differences in performance with different indicators were attributed to the rate of information change provided by a given system and to rate of observing the indicator during approaches.

AN (1) AD-A067 983/XAG

FG (2) 050200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 Through 1978.

RD (11) Jan 1979

PG (12) 72 Pages

RS (14) FAA-AM-79-1

RC (20) Unclassified report

NO (21) See also AD-A037 234.

DE (23) *Indexes, *Aviation medicine, *Reports
Medical research

AB (27) An index to Office of Aviation Medicine Reports (1964-1978) and Civil Aeromedical Research Institute Reports (1961-1963) is presented as a reference for those engaged in aviation medicine and related activities. It provides a listing of all FAA aviation medicine reports published from 1961 through 1978 by year, number, author, title, and subject. (Author)

AN (1) AD-A069 375/XAG

FG (2) 050800

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Effects of Congener and Noncongener Alcoholic Beverages on a Clinical Ataxia Test Battery

AU (10) Schroeder, David J.

Collins, William E.

RD (11) Jan 1979

PG (12) 20 Pages

RS (14) FAA-AM-79-9

RC (20) Unclassified report

DE (23) *Alcohol consumption

Tolerances(Physiology), Ataxia, Clinical medicine, Performance(Human), Aviation medicine, Test and evaluation, Physical fitness, Medical examination, Physiological effects

ID (25) Congeners, Hangover, LPN-FAA-AM-C-79-PSY-75, LPN-FAA-AM-D-74-PSY-27

AB (27) It is clear that the ingestion of alcohol can disturb postural measures

and it is possible that the effects of alcohol may be manifested at significant stages subsequent to acute intoxication; i.e., during so-called 'hangover' periods. This study was designed to investigate the performance of normally 'heavy' and normally 'light' young male drinkers on an ataxia test battery before and after they drank either a high-congener (bourbon) or low-congener (vodka) alcoholic beverage. To assess possible long-term effects of alcohol, testing was conducted 1, 3, 5, 9, 24, and 32 hours after drinking. With the exception of one walking test that showed inferior performance 1 hour after drinking and recovery thereafter, the measures of the ataxia test battery were about equally affected, showing decrements from 1 to 3 hours after drinking and a return to a normal plateau by the fifth postdrinking hour. Normally heavy drinkers tended to display less ataxia following drinking than did normally light drinkers. Comparisons of the low- and high-congener beverages failed to reveal any significant differential effects. There were also no indications of any significant impairment on ataxia tests during the hangover period.

AN (1) AD-A075 352/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Report of the FAA Task Force on Aircraft Separation Assurance. Volume I. (Revised). Executive Summary

AU (10) Blake, Neal A.

Koenke, Edmund

Page, Leland

Pozesky, Martin T.

RD (11) Jan 1979

PG (12) 38 Pages

RS (14) FAA-EM-78-19-VOL-1-REV.

RC (20) Unclassified report

NO (21) Revision of Report dated Dec 78, AD-A067 905.

DE (23) *Air traffic control systems, *Separation

Aviation accidents, Collisions, Aircraft, Air control centers, Data links, Surface to air

ID (25) Aircraft separation assurance, DABS(Discrete Address Beacon Systems), ATARS(Automated Traffic Advisory and Resolution System), ATS(Automated Terminal Service)

AB (27) A task force has developed FAA Engineering and Development consensus on the integrated aircraft separation assurance system for the National Airspace System. This report details a study of system errors,

mid-air, and near mid-air, to define the problem. The system element requirements are defined to provide two levels of backup to the ATC system: a separation violation warning and a final fail safe collision advisory and resolution function. The current FAA ASA development programs are discussed and the changes are detailed which are required to transition to an integrated ASA system. This report consists of three volumes. Volume I is the Executive Summary with an overview of the work performed by the Task Force. Volume II is the detailed main concept description delineating the required systems and interfaces. Volume III includes appendices, referred to in the main report, which define in detail the specific interfaces and designs required for system integration. (Author)

AN (1) AD-A077 713/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Report of the FAA Task Force on Aircraft Separation Assurance. Volume III. Appendices

AU (10) Bryant, Douglas J.

Hamrick, David G.

Love, W. Dwight

McFarland, Alvin L.

Mundra, Anand D.

RD (11) Jan 1979

PG (12) 338 Pages

RS (14) FAA-EM-78-19-03

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A067 905.

DE (23) *Collision avoidance, *Air traffic control systems

Air space, Allocations, Errors, Aircraft, Separation, Aviation safety, Warning systems, Integrated systems, Automation, Beacons, Aviation accidents

ID (25) Midair collisions, ASA(Aircraft Separation Assurance), BCAS(Beacon Collision Avoidance System), DABS(Discrete Address Beacon System), ATARS(Automated Traffic Advisory and Resolution Service)

AB (27) A task force has developed FAA Engineering and Development consensus on the integrated aircraft separation assurance system for the National Airspace System. This report details a study of system errors, mid-air, and near mid-air, and altitude deviations to define the problem. The system element requirements are defined to provide two levels of backup to the ATC system: a separation violation warning and

a final fail safe collision advisory and resolution function. The current FAA ASA development programs are discussed and the changes are detailed which are required to transition to an integrated ASA system.

This report consists of three volumes. Volume I is the Executive Summary with an overview of the work performed by the Task Force. Volume II is the detailed main concept description delineating the required systems and interfaces. Volume III includes appendices, referred to in the main report, which define in detail the specific interfaces and designs required for system integration. (Author)

AN (1) AD-A077 807/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Report of the FAA Task Force on Aircraft Separation Assurance. Volume II. Concept Description

AU (10) Blake, Neal A.

Koenke, Edmund J.

Page, Leland F.

Pozesky, Martin T.

RD (11) Jan 1979

PG (12) 70 Pages

RS (14) FAA-EM-78-19-02

RC (20) Unclassified report

NO (21) See also Volume 3, AD-A077 713.

DE (23) *Air traffic control systems, *Separation

Aircraft, Aviation accidents, Collisions, Warning systems

ID (25) Aircraft separation assurance, ATARS(Automated Traffic Advisory and Resolution Service), BCAS(Beacon Collision Avoidance System), ATS(Automated Terminal Service)

AB (27) A task force has developed FAA Engineering and Development consensus on the integrated aircraft separation assurance system for the National Airspace System. This report details a study of system errors, mid-air, and near mid-air, and altitude deviations to define the problem. The system element requirements are defined to provide two levels of backup to the ATC system: a separation violation warning and a final fail safe collision advisory and resolution function. The current Faa ASA development programs are discussed and the changes are detailed which are required to transition to an integrated ASA system. This report consists of three volumes. Volume I is the Executive Summary with an overview of the work performed by the Task Force. Volume II is the detailed main concept description delineating the

required systems and interfaces. Volume III includes appendices, referred to in the main report, which define in detail the specific interfaces and designs required for system integration. (Author)

AN (1) AD-A099 963/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Miami International Airport Data Package Number 2. Airport Improvement Task Force Delay Studies.

RD (11) Jan 1979

PG (12) 96 Pages

RC (20) Unclassified report

NO (21) See also AD-A099 964.

DE (23) *Airports

Ground traffic, Aircraft landings, Takeoff, Delay, Runways, Taxiways,

Utilization, Statistical analysis

ID (25) *Miami International Airport

AN (1) AD-A078 617/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Current Aviation Statistics: Air Traffic Activity Terminal Area Relationships. Fiscal Years 1977 and 1978.

RD (11) 1979

PG (12) 100 Pages

RS (14) FAA-AMS-220-79-4

RC (20) Unclassified report

DE (23) *Airports, *Air traffic

Civil aviation, Aircraft landings, Takeoff, Instrument landings,

Statistical data, Tables(Data)

AB (27) Busy hour estimates are obtained from periodic counts of 60 minutes in duration. These counts are made during known high activity periods for each traffic category. From this sample, tower personnel select a count which is representative of daily busy hour activity for each category. The statistical tables in this publication contain traffic estimates for each airport at which an air traffic control tower operated during all of FY 1977 and FY 1978. Provided with peak day and busy hour counts are average day and hour operations computed from the annual operations counts. Measures of peaking characteristics are given by the ratios

peak day to average day and busy hour to average hour by individual airport by size group. (Author)

AN (1) AD-A086 293/XAG

**FG (2) 010500
050500**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR
FOR AIRPORTS**

TI (6) Operations under the Airport and Airway Development Act of 1970 as Amended by the Airport and Airway Development Act Amendments of 1976.

DN (9) Rept. no. 10 (Annual) for period ending 30 Sep 79

AU (10) Martin, Virginia J.

RD (11) 1979

PG (12) 161 Pages

RS (14) FAA-ARP-80-1

RC (20) Unclassified report

NO (21) See also rept. no. FAA-ARP-79-1, AD-A069 023.

DE (23) *Airports

Modification, Grants, Federal law, United States government

ID (25) Improvements, Federal aid

AB (27) Section 24 of the Airport and Airway Development Act of 1970 (P.L. 91-258) requires that the Secretary, Department of Transportation, submit an annual report to Congress of operations under Part II of the Act for the preceding fiscal year. This report covers operations for the fiscal year ending September 30, 1979. (Author)

AN (1) AD-A088 370/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Terminal Area Air Traffic Relationships (Peak Day/Busy Hour).

RD (11) 1979

PG (12) 69 Pages

RC (20) Unclassified report

DE (23) *Air traffic, *Airports

Air traffic control terminal areas, Commercial aircraft, Tables(Data), United States

AB (27) Terminal Area Air Traffic Relationships furnishes peak day and busy hour air traffic counts for each airport at which Federal Aviation Administration air traffic control tower operated during all of fiscal

year 1979. Also provided are average daily and hourly operations computed from the annual operations count. Measures of peaking characteristics are given by the ratios peak day to average day and of busy hour to average hour by individual airports. The airports are separated into air carrier and general aviation airports because of the different characteristics of the two groups. (Author)

AN (1) AD-A065 026/XAG

**FG (2) 040100
240100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIRONMENT AND ENERGY

TI (6) Meeting of the High Altitude Pollution Program Scientific Advisory Committee. (1st). Executive Summary.

RD (11) Dec 1978

PG (12) 23 Pages

RS (14) FAA-AEE-78-31

RC (20) Unclassified report

DE (23) *Air pollution, *Aircraft exhaust

Atmospheric chemistry, Atmospheric physics, High altitude, Environmental protection, Advisory activities, Ozone, Upper atmosphere, Nitrogen oxides, Aircraft industry

AB (27) This is the Executive Summary of the first meeting of the High Altitude Pollution Program Scientific Advisory Committee which met in Washington, D. C. from November 29-December 1, 1978. The Committee is composed of 25 members who are experts in a number of fields related to atmospheric chemistry and physics, aviation, and engineering.

AN (1) AD-A066 332/XAG

**FG (2) 010500
050200
050300**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION SYSTEM PLANS

TI (6) Airport Capacity Investment Handbook.

DN (9) Final rept. Oct 76-Sep 77

AU (10) Bellantoni, J. F.

Fuertes, L. A.

RD (11) Dec 1978

PG (12) 172 Pages

RS (14) FAA-ASP-78-8
RN (18) TSC-FAA-78-18
RC (20) Unclassified report
DE (23) *Airports, *Investments, *Handbooks
Cost analysis, Economics, Capacity(Quantity), Commercial aviation, Delay, Air transportation, Benefits
AB (27) This handbook provides a methodology for estimating the benefits and costs of capacity-related investments in airports in the United States. The procedures are laid out in a series of worksheets. The user provides certain basic information such as expected traffic levels, aircraft type mix, operations rates before and after the investment, and construction costs. Following the procedures laid out in the worksheets, he then estimates airport delay reduction benefits, system-wide delay reduction benefits, and the benefits of reduced diversions due to new runway construction. These benefits are converted to dollars, discounted over a twenty year period, and compared to costs similarly discounted, to arrive at an approximate benefit/cost ratio. (Author)

AN (1) AD-A068 189/XAG
FG (2) 050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Summary Report of 1977-1978 Task Force on Crew Workload.
DN (9) Final rept. May 77-Aug 78
AU (10) Hay,George C.
House,Charles D.
Sulzer,Richard L.
RD (11) Dec 1978
PG (12) 218 Pages
RS (14) FAA-EM-78-15
RC (20) Unclassified report
DE (23) *Work measurement, *Aviation safety
Pilots, Estimates, Management, Manpower utilization
AB (27) Workload is multidimensional and the reactions of individual pilots to increased task demands vary widely. While it has been found useful for various purposes in the aircraft design and development cycle to measure selected aspects of workload, to obtain an estimate of total pilot work and the potential for task overloading it has been necessary to rely primarily on broad measures supplied by pilots themselves. Thus, the final proof of crew capability continues to be obtained in actual test flight. An analysis of the total accident experience of

U.S. certificated air-route carriers reveals that there is no evidence that a flight-deck crew of two in an appropriately designed aircraft is less safe than a crew of three pilots. A review of the procedures followed in the airworthiness certification of recent U.S. air-carrier aircraft indicates that manufacturers have demonstrated pilot workload in a fully modern and competent fashion, under the cognizance of FAA, and that actual crew complement approval has been based on both the results of the workload demonstrations and the experience gained in a significant flight test program. (Author)

AN (1) AD-A073 178/XAG
FG (2) 010300
170501

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Operational Evaluation of an Optical Infrared Airborne Proximity Warning Indicator (APWI).

DN (9) Final rept. Apr 76-Aug 77
AU (10) Lucier,Ernest
RD (11) Dec 1978
PG (12) 39 Pages
RS (14) FAA-RD--78-153
RC (20) Unclassified report
DE (23) *Warning systems, *Proximity devices, *Aircraft equipment, *Infrared detectors
Aircraft, Marker lights, Near infrared radiation, Infrared detection, Display systems, Test and evaluation, Questionnaires, Laboratory tests, Collision avoidance, Indicating instruments

ID (25) *Airborne proximity warning indicators

AB (27) This report summarizes the results of an operational evaluation conducted between April 1976 and August 1977 by general aviation pilots on an Airborne Proximity Warning Indicator (APWI). The APWI evaluated was a Rock Avionic Systems unit which was produced by the Scientific Prototype Manufacturing Company. The FAA conducted an operational evaluation of the Rock Avionic APWI using four systems installed in general aviation aircraft. The evaluation produced results consisting of questionnaires completed by the general aviation pilots who flew the system. (Author)

AN (1) AD-A075 513/XAG
FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft Calendar Year 1978.

DN (9) Annual rept.

AU (10) Moles, Charles
Wimbush, Violet

RD (11) 31 Dec 1978

PG (12) 350 Pages

RC (20) Unclassified report

DE (23) *Aircraft, *Civil aviation

Census, Geographical distribution

AB (27) The Census of U.S. Civil Aircraft contains an annual count of all registered civil aircraft in the United States. This information is disseminated by the Federal Aviation Administration to serve as an up-to-date reference on the U.S. civil aircraft fleet, its size and composition. Historical series are presented to enable industry and other aviation groups to evaluate aviation progress, to determine past trends, and to estimate future trends. This publication contains data for calendar year 1978.

AN (1) AD-A075 537/XAG

FG (2) 010500

130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airport Pavement Design and Evaluation.

DN (9) Advisory circular.

RD (11) 07 Dec 1978

PG (12) 190 Pages

RS (14) FAA/AC-150/5320-6C

RC (20) Unclassified report

NO (21) Supersedes Rept. no. FAA/AC-150/5320-LB, dated 28 May 1974.

DE (23) *Runways, *Pavements, *Pavement bases, *Airports

Reinforced concrete, Aircraft landings, Soil classification, Permafrost, Construction materials, Civil engineering, Standards

AB (27) Airport pavements are constructed to provide adequate support for the loads imposed by aircraft using an airport and to produce a firm, stable, smooth, all-year, all-weather surface free from dust or other particles that may be blown or picked up by propeller wash or jet blast. In order to satisfactorily fulfill these requirements, the pavement must be of such quality and thickness that it will not fail under the load imposed. In addition, it must possess sufficient inherent stability to withstand, without damage, the abrasive action of

traffic, adverse weather conditions, and other deteriorating influences. To produce such pavements requires a coordination of many factors of design, construction, and inspection to assure the best possible combination of available materials and a high standard of workmanship. These factors are discussed in this report.

AN (1) AD-A080 594/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Statistical Handbook of Aviation, Calendar Year 1978.

DN (9) Annual rept.

AU (10) Beardsley, Patricia

RD (11) 31 Dec 1978

PG (12) 159 Pages

RC (20) Unclassified report

DE (23) *Civil aviation

United States, Air traffic, Airports, Transport aircraft, Operation, Commercial aviation, Pilots, Industrial production, Aviation accidents, Statistical data, Tables(Data), Handbooks

AB (27) This report presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aeronautical Production and Exports, Aircraft Accidents, and a Glossary of the terms used in this publication. (Author)

AN (1) AD-A099 962/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ

TI (6) Miami International Airport. Data Package Number 1. Miami Airport Configurations. Airport Improvement Task Force Delay Studies.

RD (11) Dec 1978

PG (12) 25 Pages

RC (20) Unclassified report

NO (21) See Data Package No. 2, AD-A099 963.

DE (23) *Airports

Ground traffic, Aircraft landings, Takeoff, Delay, Runways, Taxiways, Utilization, Statistical analysis

ID (25) *Miami International Airport

AN (1) AD-A301 948/XAG

FG (2) 200300

061100

131200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK
AERONAUTICAL CENTER

TI (6) Electrical Insulation Fire Characteristics. Volume II. Toxicity.

DN (9) Final rept. Jul 76-Jul 78

AU (10) Crane, Charles R.

Sanders, Donald C.

Endecott, Boyd R.

Abott, John K.

RD (11) Dec 1978

PG (12) 101 Pages

RS (14) DOT-TSC-UMTA-78-48-VOL-2

CT (15) DOT-TSC-RA-77-15

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *TOXICITY, *FIRES, *ELECTRICAL INSULATION

MEASUREMENT, SIZES(DIMENSIONS), EXPOSURE(GENERAL), AIR, INSULATION,
WIRE, WEIGHT, ANIMALS, ASSEMBLY, RANKING, THERMAL DEGRADATION,

GAGES,

ELECTRIC CONDUCTORS, INCAPACITATION, RANK ORDER STATISTICS,
RECIRCULATION, COMBUSTION PRODUCTS

ID (25) INHALATION TOXICOLOGY, COMBUSTION TOXICOLOGY, PYROLYSIS
PRODUCTS,

TIME-TO-INCAPACITATION, TIME-TO-DEATH, ELECTRICAL INSULATION

AB (27) The relative toxicities of the combustion products of 14 electrical wiring insulations were evaluated using animal incapacitation as a measure of toxicity. One-gram insulation samples were pyrolyzed in a quartz combustion tube connected in-line with a 12.6-L-exposure chamber by an air recirculation assembly to form a closed exposure system. Each material was pyrolyzed under three thermal degradation conditions and the time-to-incapacitation for the "worst case" condition (shortest time) was used to rank the materials in order of their relative potential toxicity. A rank order for all 14 materials is presented on the basis of potential toxicity for equal weights of insulation; relative ranking by toxicity for equal lengths of conductor is presented for those materials supplied on conductors of equal gauge.

AN (1) AD-A064 378/XAG

FG (2) 100400

210400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION

POLICY

TI (6) A Proposed Aviation Energy Conservation Program for the National
Aviation System.

DN (9) Final rept.

RD (11) Nov 1978

PG (12) 33 Pages

RS (14) FAA-AVP-78-12

RC (20) Unclassified report

DE (23) *Energy conservation, *Aviation fuels

Economic analysis, Savings, Policies, Long range(Time), Fuel shortages,
Transportation, Fuel consumption

ID (25) *Federal Aviation Administration, Aviation energy

AB (27) This study presents an overview of potential options for improving aviation energy efficiency. Included in the proposed program are alternatives that could be pursued by the Federal Government as well as options that could be adopted by the various segments of the aviation industry. The report is in four volumes: Volume I - The Short Run, 1977-1978; Volume II - The Intermediate and Long Run, 1979-1990; Volume III - The Proposed Aviation Energy Conservation Program; and Summary - Overview of preceding technical volumes. (Author)

AN (1) AD-A064 379/XAG

FG (2) 010309

210400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION

POLICY

TI (6) A Proposed Aviation Energy Conservation Program for the National
Aviation System. Volume I. The Short Run, 1977-1978.

DN (9) Final rept.

RD (11) Nov 1978

PG (12) 77 Pages

RS (14) FAA-AVP-78-12-VOL-1

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A064 466.

DE (23) *Energy conservation, *Aviation fuels

Fuel consumption, Efficiency, Savings, Air traffic, Transport aircraft,
Commercial aircraft, Policies, Inventory control

ID (25) *Aviation energy conservation program

AB (27) This study presents an overview of potential options for improving aviation energy efficiency. Included in the proposed program are alternatives that could be pursued by the Federal Government as well as options that could be adopted by the various segments of the aviation industry. The report is in four volumes: Volume 1 - The Short Run, 1977-1978; Volume 2 - The Intermediate and Long Run, 1979-1990; Volume 3 - The Proposed Aviation Energy Conservation Program; and Summary - Overview of preceding technical volumes. (Author)

AN (1) AD-A064 454/XAG

FG (2) 010500

050100

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Financing the Airport and Airway System: Cost Allocation and Recovery.

DN (9) Final draft rept.

AU (10) Rodgers, John M.

RD (11) Nov 1978

PG (12) 77 Pages

RS (14) FAA-AVP-78-14

RC (20) Unclassified report

DE (23) *Airports, *Finance, *Civil aviation, *Taxes

Costs, Allocations, Utilization, Public administration, Recovery, Management planning and control

ID (25) LPN-FAA-AVP-210

AB (27) Development and maintenance of the Federal airport and airway system are authorized by the Airport and Airway Development Act of 1970 (as amended through 1976). Elements of existing legislation will expire in 1980. The purpose of this report is to analyze airport and airway system finances as a guide for developing post-1980 development and financial programs. Estimates are provided of 1978 and 1987 airport and airway system costs. System costs are allocated to users under two alternative procedures providing a range of cost responsibility. Aviation tax revenues are projected for 1978 and 1987 and are compared with allocated user costs. Several changes in aviation user taxes are evaluated as methods of aligning future airport and airway tax contributions with cost responsibility. (Author)

AN (1) AD-A064 466/XAG

FG (2) 210400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) A Proposed Aviation Energy Conservation Program for the National Aviation System. Volume II. The Intermediate and Long Run, 1979-1990.

DN (9) Final rept.

RD (11) Nov 1978

PG (12) 83 Pages

RS (14) FAA-AVP-78-12-VOL-2

RC (20) Unclassified report

NO (21) See also Volume 3, AD-A064 623.

DE (23) *Energy conservation, *Aviation fuels, *Cost analysis Savings, Efficiency, Policies, Fuel consumption, Commercial aviation, Inventory control, Computer programs, Performance(Engineering)

ID (25) *Aviation Energy Conservation Program

AB (27) This study presents an overview of potential options for improving aviation energy efficiency. Included in the proposed program are alternatives that could be pursued by the Federal Government as well as options that could be adopted by the various segments of the aviation industry. The report is in four volumes: 1 - The Short Run, 1977-1978; 2 - The Intermediate and Long Run, 1979-1990; 3 - The Proposed Aviation Energy Conservation Program; and Summary - Overview of preceding technical volumes. (Author)

AN (1) AD-A064 623/XAG

FG (2) 210400

010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) A Proposed Aviation Energy Conservation Program for the National Aviation System. Volume III. The Proposed Aviation Energy Conservation Program.

DN (9) Final rept.

RD (11) Nov 1978

PG (12) 87 Pages

RS (14) FAA-AVP-78-12-VOL-3

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A064 466.

DE (23) *ENERGY CONSERVATION, *AVIATION FUELS, *ENERGY MANAGEMENT, *AIRCRAFT

COST ANALYSIS, PLANNING, SHORT TAKEOFF AIRCRAFT, AIRFRAMES, AERODYNAMIC

CONFIGURATIONS, AIRFOILS, FLIGHT, RUNWAYS, WEATHER MODIFICATION,
FOG

DISPERSAL, AIR TRAFFIC CONTROL SYSTEMS

ID (25) Aviation energy conservation program

AB (27) This study presents an overview of potential options for improving aviation energy efficiency. Included in the proposed program are alternatives that could be pursued by the Federal Government as well as options that could be adopted by the various segments of the aviation industry. The report is in four volumes: Volume I - The Short Run, 1977-1978, Volume II - The Intermediate and Long Run, 1979-1990, Volume III - The Proposed Aviation Energy Conservation Program, Summary - Overview of preceding technical volumes. (Author)

AN (1) AD-A064 909/XAG

FG (2) 010500

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan. Terminal/Tower Control.

DN (9) Rept. for 1978-1982.

RD (11) Nov 1978

PG (12) 94 Pages

RS (14) FAA-ED-14-2A

RC (20) Unclassified report

NO (21) Supersedes Rept. no. FAA-ED-14-2 dated Apr 73, AD-772 746. See also AD-A051 621.

DE (23) *Airport control towers, *Air traffic control systems, *Airport radar systems

Radar beacons, Systems engineering, Planning, Display systems, Automation, Air traffic control terminal areas, Data processing, Data links

ID (25) ARTS(Automated Radar Terminal System)

AB (27) This document sets forth the engineering and development plan for FAA E/D Program 14: TERMINAL/TOWER CONTROL. The plan covers the relationship of Program 14 to the overall E/D effort, defines the purpose, scope and direction of the program, and describes the major technical elements of the program. The plan is intended to provide guidance to personnel charged with carrying out development activities under Program 14 and to provide a tool for the continuing management and control of these activities. The plan will also serve as a basis for estimating the funds required and for seeking approval of budgets.

(Author)

AN (1) AD-A066 586/XAG

FG (2) 050800

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE

TI (6) A Comparison of Three Models for Determining Test Fairness

AU (10) Lewis, Mary A.

RD (11) Nov 1978

PG (12) 17 Pages

RS (14) FAA-AM-79-3

RC (20) Unclassified report

DE (23) *Psychological tests, *Models

Test methods, Probability, Comparison, Personnel selection, Statistical distributions, Ratios

ID (25) *Fairness, FAA-AM-C-78/79-PSY-66

AB (27) There are three prominent models of test fairness in the dichotomous situation: (a) Thorndike's Constant Ratio model (the ratio of the proportion successful to the proportion selected should be equal for the majority and the minority group); (b) Darlington's Conditional Probability model (the probability of selection, given that an individual is successful, should be equal for both groups); and (c) Einhorn and Bass' Equal Probability model (the probability of success, given that an individual is selected, should be equal for both groups). The present study explored, using a Monte Carlo technique, the robustness of these models to divergent sample size. This technique allows the generation of normally distributed variables of known means, standard deviations, and intercorrelations. Results indicated that all three models were equally able to identify test fairness under the conditions specified in the present study. The choice of model to use when evaluating test fairness must remain a subjective one based on the fairness goals of the testing agency and further definition of the test fairness by Federal guidelines.

AN (1) AD-A067 893/XAG

FG (2) 010600

240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ENVIRONMENT
AND ENERGY

**TI (6) Proceedings, Air Quality and Aviation: An International Conference,
16-18 October 1978, Reston, Virginia**

AU (10) Sundararaman, N.

RD (11) Nov 1978

PG (12) 251 Pages

RS (14) FAA-EE-78-26

RN (18) XH-FAA/EE

RC (20) Unclassified report

DE (23) *SYMPOSIA, *AIR QUALITY, *JET ENGINE EXHAUST

EMISSION, AIR POLLUTION, HYDROCARBONS, STANDARDS, CIVIL AVIATION,
POLLUTANTS, CARBON MONOXIDE, NITROGEN OXIDES, AIRPORTS, OZONE,
AIRCRAFT

EXHAUST

AB (27) This conference examined the effects of aircraft operations on ambient air quality. It has been becoming increasingly apparent that the scales to be considered range from local to regional and that aircraft as a source of emissions have to be distinguished from other airport-related sources such as passenger and ground support vehicles, and stored fuel. The following are among the technical findings of the conference on the pollutants of interest: (1) Hydrocarbons (HC) -- In view of the complex nature of the relationship between HC and the photochemical oxidant problem, it appears that aircraft as a source must be viewed along with other sources in the region; (2) Carbon Monoxide (CO) -- General aviation aircraft appear to make little contribution. With regard to other aircraft, periods and areas of intense activity (ramp and queuing areas, automobile access roadways, vicinity of buildings and terminals) may give rise to 'hot' spots. (3) Nitrogen Oxides (NOx) -- The NOx is emitted as nitric oxide (NO) along the runway. The problem may be quite local and its severity appears to be linked to the levels of ozone in the airport vicinity; and (4) Particles: Particle emissions do not appear to be a problem except for possible effects on visibility around airports.

AN (1) AD-A070 076/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION SYSTEM**

PLANS

**TI (6) Installation Criteria for the Approach Lighting System Improvement
Program (ALSIP).**

DN (9) Final rept.

AU (10) Zaidman, Steven

RD (11) Nov 1978

PG (12) 44 Pages

RS (14) FAA-ASP-78-5

RC (20) Unclassified report

DE (23) *Approach lights, *Aircraft landings

Cost analysis, Aviation safety, Modification, Installation, Runways,
Energy conservation

ID (25) *ALSIP(Approach Lighting System Improvement Program), Federal Aviation
Administration

AB (27) This report develops investment criteria for retrofit of runway approach lighting systems under the Approach Lighting System Improvement Program (ALSIP). A major component of this program is the retrofit of existing rigid light support structures with frangible mountings. Other aspects include conversion of high-intensity lighting systems to more energy-efficient configurations. There are 397 approach lighting systems eligible for retrofit under the ALSIP Program. The cost of modifying these systems is \$77.7 million. Criteria are developed by benefit-versus-cost analysis. Each lighting system under ALSIP will be evaluated using the appropriate benefit/cost (B/C) formula. All systems will be ranked by order of B/C ratio. Implementation of the program will continue within approved funding levels in accordance with the criteria ranking. (Author)

AN (1) AD-A076 457/XAG

FG (2) 050500

050600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

MEDICINE

TI (6) Task Force on Deterrence of Air Piracy.

DN (9) Final rept.

AU (10) Reighard, H. L.

Dailey, John T.

RD (11) Nov 1978

PG (12) 139 Pages

RS (14) FAA-AM-78-35

RC (20) Unclassified report

DE (23) *Aircraft hijacking

Deterrence, History, Weapons, Detection, International relations, Task
forces

AB (27) In February 1969, as the frequency of hijacking of U.S. air carrier aircraft was rising to an all-time high, the Federal Aviation Administration established a multi-disciplinary Task Force on Deterrence of Air Piracy. The work of the Task Force in developing an

airline passenger pre-boarding screening system and other actions to deter hijacking is summarized. The screening system combined a behavioral profile with a metal-detecting magnetometer to identify those persons who could be potential hijackers. The value of the epidemiological method and the multi-disciplinary approach to problems of the magnitude and complexity of hijacking is emphasized. (Author)

AN (1) AD-A063 731/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) A Method to Evaluate Performance Reliability of Individual Subjects in Laboratory Research Applied to Work Settings

AU (10) Jennings, Alan E.

RD (11) Oct 1978

PG (12) 84 Pages

RS (14) FAA-AM-78-37

RC (20) Unclassified report

DE (23) *Performance(Human)

Reliability, Measurement, Mathematical analysis

ID (25) LPN-FAA-AM-D-78-PSY-57

AB (27) This report presents a method that may be used to evaluate the reliability of performance of individual subjects, particularly in applied laboratory research. The method is based on analysis of variance of a tasks-by-subjects data matrix, with all scores standardized. If all tasks are parallel, then the average correlation among tasks is an inverse function of the within-subject variance, which may be computed for any individual subject or group of subjects. The formula for determining the relationship between within-subject variance and average correlation is developed and a method of testing the reliability of individual subjects against the general level of reliability is presented. Possible applications of the method are noted. (Author)

AN (1) AD-A064 678/XAG

FG (2) 200600

230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Optical Properties of Smoke-Protective Devices

AU (10) Vaughan, John A.

Welsh, Kenneth W.

Rasmussen, Paul G.

RD (11) Oct 1978

PG (12) 21 Pages

RS (14) FAA-AM-78-41

RC (20) Unclassified report

DE (23) *OXYGEN MASKS, *GOGGLES, *OPTICAL PROPERTIES

SMOKE, PROTECTIVE MASKS, LIGHT TRANSMISSION, HAZE, PRISMATIC BODIES,

REFRACTIVE INDEX, DISTORTION, CURVED PROFILES, STANDARDS, MILITARY REQUIREMENTS, SPECIFICATIONS, VISION

ID (25) LPN-FAA-AM-A-78-PHY-95

AB (27) Optical properties of 13 smoke-protective devices were determined. The devices tested comprised 8 goggles and 5 fullface oxygen masks (3 rigid one-piece masks and 2 flexible hoods). Those properties evaluated were: (i) light transmission, (ii) optical haze, (iii) prismatic deviation, (iv) refractive power, (v) optical distortion, and (vi) surface curvature. Data were compared with optical requirements formulated by USA Standard USAS Z 87.1 and Military Specification MIL-L-38169(USAF). All clear transparencies met or exceeded standards for light transmission, and all but one (an experimental hood) met the standards for optical haze. All but 2 of 11 devices exceeded standards for spherical refractive power. Three fullface masks and two goggles with steep surface curvatures did not meet the optical requirements for prismatic deviation. Only 4 of 11 devices evaluated by a photographic method attained the standard for optical distortion; however, when the criterion of visible distortion was employed, as outlined in the military specification, 9 of the 11 devices conformed to the standard. Optical anomalies may be caused by facepiece configuration and surface curvature found in some of the smoke-protective devices. (Author)

AN (1) AD-A065 767/XAG

FG (2) 050800

060400

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL

INST

TI (6) Stress in Air Traffic Controllers: A Restudy of 32 Controllers 5 to 9 Years Later

AU (10) Melton, C. E.

McKenzie, J. M.

Wicks, S. M.

Saldivar, J. T.
RD (11) Oct 1978
PG (12) 11 Pages
RN (18) FAA-AM-78-40
RC (20) Unclassified report
DE (23) *Air traffic controllers
Stress(Physiology), Excretion, Steroids, Epinephrine, Work
ID (25) LPN-FAA-AM-C-77-PHY-102
AB (27) Thirty-two subjects who had participated in air traffic controller stress studies 5-9 years earlier were restudied with regard to urinary excretion of 17-ketogenic steroids, epinephrine, and norepinephrine. All subjects showed decreases in excretion of 17-ketogenic steroids. Eight of the subjects had taken noncontroller jobs; these subjects showed work-related increases in epinephrine excretion whereas the 24 controllers who remained active in controlling aircraft showed work-related decreases in epinephrine excretion. There were no significant findings related to norepinephrine excretion. It is concluded that the active controller group shows evidence of reduced chronic stress. Various interpretations of this finding include less stress at their new facilities, greater experience in their jobs, improvements in the entire traffic control system, and the effects of normal aging. (Author)

AN (1) AD-A068 974/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Airport Ground Access.
DN (9) Final rept.
AU (10) Gorstein, M.
Frenkel, L.
Marek, R.
RD (11) Oct 1978
PG (12) 563 Pages
RS (14) FAA-EM-79-4
RC (20) Unclassified report
DE (23) *Airports, *Ground traffic
Delay, Capacity(Quantity), Problem solving, Transportation, Congestion, Statistical analysis, Passengers, Operations research, Commercial aviation, Highways
ID (25) *Airport Access Capacity
AB (27) This technical report is an outgrowth of a study requested by Congress

to determine the extent to which inadequate (off-airport) ground access to airports constrains airport capacity and air travel. Case studies of sixteen commercial airports of various sizes and locales were prepared. The report describes these case studies and includes the following: (1) An identification and projection of the access capacity of representative airports; (2) An determination as to whether access needs at these airports are adequately considered in the planning process; (3) An identification of potential solutions to noted access problems; and (4) An identification of projects for consideration by local public bodies and planning authorities which may improve airport access in selected cases. Also included is a 1978 update of the ground access to airports study prepared by the Federal Highway Administration (FHWA). (Author)

AN (1) AD-A069 373/XAG

FG (2) 050800
061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE

TI (6) Laboratory Performance during Acute Intoxication and Hangover

AU (10) Collins, William E.

Chiles, W. Dean

RD (11) Oct 1978

PG (12) 31 Pages

RS (14) FAA-AM-79-7

RC (20) Unclassified report

DE (23) *Performance(Human), *Alcohol consumption

Placebos, Test and Evaluation, Speech recognition, Sleep deprivation, Pilots, Intoxication, Physiological effects, Speech recognition, Safety

ID (25) Hangover, Congeners, LPN-FAA-AM-D-76/77/78-PSY-62

AB (27) Eleven private pilots (7 men and 4 women) were recruited and trained on the Multiple Task Performance Battery (MTPB), static and dynamic tracking of a localizer/glide slope instrument, a speech intelligibility test (single words with a background of aircraft noise), and use of the Intoxilyzer. The experiment comprised four test sessions (vodka, bourbon, placebo, and control sessions) held at weekly intervals. Sessions began at about 1700 and continued through midnight to about 1100 the next day. Subjects were tested in groups of 3 or 4 and were not told whether they were drinking alcohol or placebo. The ordering of sessions was approximately counter-balanced. Subjects were given all tests in the evening (before and after a monitored dinner), drank prepared beverages from 2030 to midnight, and were tested again.

Subjects slept 4-5 hours, were awakened around 0700, fed, and performed all tasks again, beginning at 0800 (8 hours after they had finished drinking). Results showed clear deleterious effects of alcohol on the MTPB and the tracking tasks immediately following drinking. During the morning (hangover) tests scores on the MTPB and on the static and dynamic tracking tasks showed small circadian effects (scores were better) without impairment due to the alcohol. Speech perception scores were unaffected by alcohol; scores were always best in the evening and poorest in the morning. There were no congener effects. These results thus offer no evidence contrary to the 8-hour rule.

AN (1) AD-A087 311/XAG

FG (2) 170300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) VHF Omnidirectional Radio Range (VOR) Electromagnetic Spectrum Measurements.

DN (9) Final rept.

AU (10) Kanen, Garth M.

RD (11) 18 Oct 1978

PG (12) 47 Pages

RC (20) Unclassified report

DE (23) *Radio ranges, *Direction finding

Omnidirectional, Very high frequency, Systems analysis, Performance(Engineering), Maintenance, Surveys, Installation, Sites

ID (25) Spectrum displays, LPN-FAA-213-060-78

AB (27) This report presents VOR electromagnetic spectrum measurement techniques applicable to site survey, installation, maintenance, and interference alleviation activities. Spectrum displays of the VOR emission contain valuable system performance information. These displays contain significant detail which can be used for analyzing the performance of various parts of the system. A basic set of VOR radiated spectrum displays taken at specific ground locations would be of value as a part of the basic facility records. Subsequent display samples could be taken remotely without disturbing the facility. Comparison of these with the site records would give insight into system performance and assist in the maintenance and flight inspection activities.

(Author)

AN (1) AD-A087 435/XAG

FG (2) 010600

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Annual FAA Forecast Conference Proceedings (4th).

RD (11) Oct 1978

PG (12) 46 Pages

RC (20) Unclassified report

NO (21) See also report dated Oct 79, AD-A085 210.

DE (23) *Civil aviation, *Air transportation

Air traffic, Economics, Forecasting, Symposia

AB (27) Contents: FAA Initiatives: Forecasting for Decisionmaking; FAA Aviation Forecasts; State System Forecasting; Airport Management; State Aviation Commissions; Regional Transportation Authorities; Federal Government; National Economic Forecasts and Their Impact on the Outlook for Aviation; Counting Activity at Nontowered Airports; Aviation Master Plans and Forecasting; State Transportation Department; and Environmental Impact Statements.

AN (1) AD-A103 367/XAG

FG (2) 010600

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

AND PLANS

TI (6) Annual FAA Forecast Conference Proceedings (4th).

RD (11) Oct 1978

PG (12) 51 Pages

RS (14) FAA-AVP-79-6

RC (20) Unclassified report

DE (23) *Air traffic

Civil aviation, Airports, Aircraft landings, Takeoff, Air transportation, Passenger aircraft, Economic analysis, Forecasting, Symposia

AB (27) Contents: FAA Initiatives-Forecasting for Decisionmaking, FAA Aviation Forecasts, State System Forecasting, Airport Management, State Aviation Commissions, Regional Transportation Authorities, Federal Government, National Economic Forecasts and Their Impact on the Outlook for Aviation, Counting Activity at Nontowered Airports, Aviation Master Plans and Forecasting, State Transportation Department, Environmental Impact Statements, and Conference Wrap-Up.

AN (1) AD-A110 351/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 8, 1 Jan-30 Jun 78.

RD (11) 12 Oct 1978

PG (12) 49 Pages

RS (14) FAA-ACS-82-8

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Security, *Civil aviation

Aviation safety, Commercial aviation, Threats, Sabotage, Aircraft hijacking, Bombs, Explosives, Weapons, Detectors, Passengers, Terrorism, Prevention

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A057 935/XAG

FG (2) 170703

250200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) The Selection of ILS Localizer Antenna Patterns for Use in the Frequency Assignment Process.

DN (9) Final rept.

AU (10) Smith,Robert D.

RD (11) Sep 1978

PG (12) 250 Pages

RS (14) FAA-RD-77-130

RN (18) GIDEP-E117-0035

RC (20) Unclassified report

DE (23) *Frequency allocation, *Air traffic control systems, *Instrument landings

Electromagnetic compatibility, Antenna radiation patterns, Comparison, Loop antennas, Dipole antennas, Antenna arrays, Calibration

ID (25) AN/MRN-7

AB (27) The frequency assignment process is meant to insure interference-free

service within the service volume. This is done by choosing frequencies in a manner which provides certain minimum cochannel and adjacent channel desired to undesired signal ratios at critical points of the service volume. One of the factors which affects a station's signal strength in space is its horizontal antenna pattern. ILS localizer antennas have undergone significant changes in recent years. In order to reduce siting effects, antenna patterns have evolved from the nearly omnidirectional 8-loop to the highly directional traveling wave and log periodic dipole antennas. The horizontal localizer antenna pattern now has a substantial effect on the separation required between localizer stations. This report compares measured and theoretical data with FAA antenna pattern specifications. For each antenna type, a single horizontal antenna pattern is recommended for use in the frequency assignment process. (Author)

AN (1) AD-A060 110/XAG

FG (2) 061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Agricultural Aviation Versus other General Aviation: Toxicological Findings in Fatal Accidents

AU (10) Lacefield,Delbert J.

Roberts,Patricia A.

Blossom,Curtis W.

RD (11) Sep 1978

PG (12) 8 Pages

RS (14) FAA-AM-78-31

RC (20) Unclassified report

DE (23) *Toxicity, *Pilots, *Aviation accidents

Alcohol consumption, Carbon monoxide, Cholinesterase, Pesticides, Insecticides, Agriculture

ID (25) LPN-FAA-A-72-PHB-14, LPN-FAA-A-73-TOX-14, LPN-FAA-A-78-TOX-14, LPN-FAA-AM-A-68-PHB-14

AB (27) Results from the toxicological study of samples from 174 pilots killed while engaged in aerial application and samples from 2,449 other general aviation pilots are compared. The incidence of alcohol in specimens was similar for ag pilots and other general aviation pilots but the blood levels of alcohol tended to be lower in the ag pilots. Carbon monoxide as an incapacitating agent did not appear to be a factor in aerial application operations. Evidence of the use of drugs or medications was less in ag pilots than in other general aviation pilots. Over half of the ag pilots had below normal cholinesterase

levels, suggesting a continuing problem of acute and/or chronic toxicity from the pesticides being applied by agricultural aircraft. This finding suggests that better educational efforts could reduce the accident rate in this important segment of our agricultural activity. (Author)

AN (1) AD-A060 727/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) FAA Aviation Forecasts Fiscal Years 1979-1990.

RD (11) Sep 1978

PG (12) 93 Pages

RS (14) FAA-AVP-78-11

RC (20) Unclassified report

DE (23) *Air traffic, *Air transportation, *Forecasting

Air traffic control systems, Air traffic control terminal areas, Public opinion, Airports, Military aircraft, Commercial aircraft

AB (27) This Federal Aviation Administration (FAA) report contains the official FAA forecasts of domestic aviation activity for Fiscal Years 1979 through 1990. It presents forecasts of aviation activity levels at FAA towered airports, air route traffic control centers, and flight service stations, as well as forecasts of aviation activity for air carriers, air taxis, general aviation, and the military--the four major users of the National Aviation System (NAS). In addition, this report presents the complete FAA aviation forecasting system, and describes the FAA's ongoing initiative to improve the decisionmaking utility of that system for the overall aviation community. It focuses on the FAA's interpretation of commentary received from the community, and on the agency's response to that commentary. (Author)

AN (1) AD-A061 074/XAG

FG (2) 050900

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Characteristics of Medically Disqualified Airman Applicants in Calendar Years 1975 and 1976

AU (10) Dark, Shirley J.

Davis, Audie W.

RD (11) Sep 1978

PG (12) 32 Pages

RS (14) FAA-AM-78-25

RC (20) Unclassified report

DE (23) *Air Force personnel, *Medical examination, *Pilots Rates, Deficiencies, Epidemiology

ID (25) Medically disqualified

AB (27) This study provides comprehensive data reflecting pertinent denial rates with respect to the medical and general attributes of those airmen denied medical certification in calendar years 1975 and 1976. Also provided are such descriptive epidemiologic data as age, sex, occupation, class of medical certificate applied for, total flying time, and cause-specific annual denial rates for medically disqualified applicants. Data on airline pilot denials are also included. The annual denial rate based on airman applicants is 7.9 per 1,000 airmen. By class of certificate applied for, the annual denial rate per 1,000 applicants is 4.5 for the first class, 6.0 for second class, and 10.2 for third class. As anticipated, general aviation and new applicants contributed greatly to total denials, reflecting that the latter are being screened for the first time. The most significant causes for denial (regardless of class applied for) are cardiovascular, the miscellaneous pathology category (endocrinopathies, disqualifying medications, and administrative denials), neuropsychiatric, and at a substantially lower level, eye pathology. Age-cause-specific findings for airline pilots follow epidemiologic expectations, with age being a significant variable associated with increased rates. (Author)

AN (1) AD-A061 519/XAG

FG (2) 050600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) An Evaluation of Four MTS Recurrent Training Courses

AU (10) Smith, Roger C.

RD (11) Sep 1978

PG (12) 105 Pages

RS (14) FAA-AM-78-32

RC (20) Unclassified report

DE (23) *Training, *Management

Performance(Human), Behavior, Students, Supervisors, Skills, Ratings, Personnel, Questionnaires, Surveys

ID (25) *Courses(Education)

AB (27) This study assessed the effectiveness of four recurrent training

courses at the FAA Management Training School (MTS). The courses evaluated were Performance Improvement and Employee Appraisal (PIP/PER), Labor Relations for Management (LMR), Constructive Discipline (CD), and Managerial Effectiveness (ME). Questionnaires concerning the usefulness of course content, effects on supervisory behavior, and impact on the organizational unit were sent to randomly selected graduates of these courses. Immediate superiors and supervisees of these graduates were also sent questionnaires concerning the effects of the course on the behavior of the graduates. A total of 402 graduates, 263 immediate superiors, and 280 supervisees responded to the survey. Approximately 90 percent of the graduates of each of the courses evaluated the training as useful overall. Self-reported behavioral changes were noted most often in the areas of increased knowledge and understanding of the subject under consideration in the course, increased ability to administer these programs, and improved supervisory and interpersonal skills in general. Behavioral ratings by graduates, their immediate superiors, and supervisees generally supported the conclusion that these courses had a beneficial impact on supervisory behavior. (Author)

AN (1) AD-A061 725/XAG
FG (2) 050800
230200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL
AEROMEDICAL
INST

TI (6) The Measurement and Scaling of Workload in Complex Performance

AU (10) Chiles,W. Dean
Jennings,Alan E.
Alluisi,Earl A.

RD (11) Sep 1978

PG (12) 15 Pages

RN (18) FAA-AM-78-34

RC (20) Unclassified report

DE (23) *Work, *Performance tests, *Performance(Human), *Man machine systems
Scaling factors, Operators(Personnel), Measurement, Monitoring, Problem
solving, Pattern recognition, Tracking, Reliability

AB (27) Two groups of young men (Group I, N = 51, tested identically on 2
successive days; Group II, N = 43, tested on 1 day only) performed
various combinations of the six tasks of the CAMI Multiple Task
Performance Battery. Two of the tasks involved the monitoring of static
(lights) and dynamic (meters) processes; the four more-active tasks
involved mental arithmetic, elementary problem solving, pattern

identification, and two-dimensional compensatory tracking. Five of
nine performance intervals provided different complex tasks consisting
of both of the monitoring tasks and two of the active tasks presented
concurrently. Other trials provided data on the singly performed
constituent tasks as well as the combined monitoring tasks. Results
indicated that all 12 performance measures varied significantly as a
function of the different task-combination conditions. A standard
psychological scaling technique (Thurstone Case V) was applied to the
monitoring data (for the green and red lights and for the meters) to
develop an index of workload for the five complex task combinations.
Since better performance was presumed to indicate a lower workload,
workload was inferred to increase as performance declined across
conditions. The best performances (scale values of zero) were
associated with single tasks as expected. Scale values for the complex
task-combination conditions were consistent between groups and between
the 2 days of testing of Group I (r's of .947 to .993).

AN (1) AD-A061 798/XAG

FG (2) 170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Short Range Terminal Radar (SRTR) Definition Study.

DN (9) Final rept. Oct 74-Oct 75.

RD (11) Sep 1978

PG (12) 140 Pages

RS (14) FAA/RD-78-64

RN (18) GIDEP-E128-1763

RC (20) Unclassified report

DE (23) *Airport radar systems

Radar cross sections, Aircraft, Radar targets, Life cycle costs,

Terminal flight facilities, Short range(Distance), L band, S band

ID (25) SRTR(Short Range Terminal Radar), VFR(Visual Flight Rules),

Precipitation clutter, Angel clutter, Small aircraft, Terminal radar

AB (27) A Study group was convened in the Summer of 1974 by the FAA to define a
Short Range Terminal Radar (SRTR) to be used at high traffic density
VFR airports which do not presently qualify for an ASR. The study group
was comprised of representatives from the Johns Hopkins University
Applied Physics Laboratory, Lincoln Laboratory, MITRE, NAFEC, AAF, AAT,
ASP, AEM and ARD. The operational requirements developed for the SRTR
include coverage on a small aircraft (one square meter radar cross
section) out to 16 nautical miles; up to 10,000 feet altitude; and in
an environment of precipitation clutter, ground clutter, angel clutter,

and anomalous propagation. The MTBF goal is 500 hours and the MTTR goal is one hour. Using these operational requirements candidate radar systems were defined at three frequencies, L-band (1250 - 1350 MHz), S-band (2700 - 2900 MHz) and S'-band (3500 - 3700 MHz). The recommended SRTR system is the S'-band system (3500 - 3700 MHz) and has the following characteristics: azimuth beamwidth of 3.4 deg, pulse width of 2 usecs, PRF of 2000 pps (average), instrumented range of 32 nautical miles, and a data rate of 4 sec. The establishment cost (in 1974 dollars) for this system is \$324,000. (Author)

AN (1) AD-A061 879/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL INST

TI (6) Time-Sharing Ability in Complex Performance. An Expanded Replication

AU (10) Chiles,W. Dean
Jennings,Alan E.

RD (11) Sep 1978

PG (12) 19 Pages

RN (18) FAA-AM-78-33

RC (20) Unclassified report

DE (23) *Time sharing, *Performance(Human)

Monitoring, Human factors engineering, Factor analysis, Analysis of variance, Test methods

AB (27) Factor analyses were performed on data from 51 subjects tested on the CAMI Multiple Task Performance Battery (MTPB). Five different complex performance task combinations were used as well as the six individual MTPB tasks performed by themselves. The primary treatment of the data involved factor analyses of the tasks of the five different complex tasks along with appropriate measures of the tasks performed singly. The results were interpreted to support the hypothesized existence of a time-sharing ability. Orthogonal factors were found on which the monitoring tasks, in general, loaded during simple performance; the monitoring tasks loaded on separate orthogonal factors when they were performed as a part of a complex task. Potential relevance of these findings to aviation selection and performance research programs is noted. (Author)

AN (1) AD-A061 921/XAG

**FG (2) 010500
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Helicopter Operations Development Plan.

DN (9) Program plan rept.

RD (11) Sep 1978

PG (12) 116 Pages

RS (14) FAA-RD-78-101

RN (18) GIDEP-E128-1901

RC (20) Unclassified report

DE (23) *Helicopters, *Flight paths, *Air traffic control systems, *Heliports
Air space, Flight maneuvers, Instrument flight, All weather aviation, Deicing systems, Planning programming budgeting, Aviation safety, Aircraft noise, Standards, Regulations

ID (25) Crashworthiness

AB (27) The Helicopter Operations Development Plan is designed to provide for upgrading and development of all those criteria, standards, procedures, systems, and regulatory activities which will allow safe, timely and economical integration of the helicopter into all-weather operations in the National Airspace System. It describes a five-year development program whose objectives is to improve the National Airspace System so as to enable helicopters to employ their unique capabilities. It includes the collection of data (both near and long term) for use by the FAA and others to ensure full integration into the NAS of this rapidly growing segment of aviation. These areas are covered in the plan: (1) IFR Helicopter Operations; (2) Navigation Systems Development; (3) Communication Systems Development; (4) Helicopter Air-Traffic Control; (5) Weather Environment; (6) All-Weather Heliport Development; (7) IFR Helicopter Certification Standards; (8) Helicopter Icing Standards; (9) Helicopter Crashworthiness and (10) Helicopter Noise Characterization. The FAA groups, other Federal Government agencies and other organizations participating in this effort are identified. Program management responsibilities are addressed. A program schedule with milestones is presented and program funding requirements are identified. (Author)

AN (1) AD-A066 132/XAG

**FG (2) 050800
050900**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) The Development of the ATC Selection Battery: A New Procedure to Make

Maximum Use of Available Information When Correcting Correlations for Restriction in Range due to Selection

- AU (10) Boone, James O.
Lewis, Mary A.
RD (11) Sep 1978
PG (12) 47 Pages
RS (14) FAA-AM-78-36
RC (20) Unclassified report
DE (23) *Psychological tests, *Personnel selection, *Monte Carlo method, *Air traffic controllers
Correlation techniques, Range(Distance), Editing, Jobs, Performance(Human), Statistical analysis
ID (25) Battery tests, Success criterion, LPN-FAA-AM-C-78-PSY-70
AB (27) A five-test selection battery was given to select Air Traffic Controllers. Data were collected on two new tests being considered for incorporation into the battery. To determine the utility of the old and new tests, it is necessary to correlate the tests with a criterion of job success. However, since criterion information is available only on persons already selected for air traffic control work, the correlation is restricted to this upper range of persons, and is, thereby, spuriously low for prediction purposes. To properly evaluate the utility of the tests, the correlation must be corrected for this restriction in range. This paper describes a new procedure to more accurately correct correlations for restriction in range. By Monte Carlo methods the new procedure is compared with Gulliksen and Thorndike's procedures and is shown to be more accurate.

- AN (1) AD-A067 910/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS
TI (6) FAA Air Traffic Activity, Fiscal Year 1978
AU (10) Wilson, Patricia
RD (11) 30 Sep 1978
PG (12) 239 Pages
RC (20) Unclassified report
AL (22) Availability: Superintendent of Documents, Government Printing Office, Washington, DC 20402 HC \$4.50.
DE (23) *Air traffic, *Airport control towers
Aviation safety, Airports, Tables(Data), Air transportation, Statistics, Instrument landings, Air traffic control systems, Statistical analysis, Airport radar systems

- ID (25) *Federal Aviation Administration
AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), Combined Station Towers (CS/Ts), International Flight Service Stations (IFSSs), and Approach Control Facilities. (Author)
24

- AN (1) AD-A099 876/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION LOS ANGELES CA WESTERN REGION
TI (6) Los Angeles International Airport Improvement Program. Revision.
RD (11) 01 Sep 1978
PG (12) 80 Pages
RC (20) Unclassified report
NO (21) Revision to report dated Sep 77, AD-A099 853.
DE (23) *Airports
Modification, Terminal flight facilities, Runways, Taxiways, Roads, Construction, Planning
ID (25) *Los Angeles International Airport
AB (27) Included herein is a revised Program of Major Capital Projects dated July 1, 1978 for the Department of Airports. Please remove all project sheets from your existing program book and completely replace with the new sheets for each airport.

- AN (1) AD-A057 438/XAG
FG (2) 010500
170703
250300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) Systems Research and Development Service August 8-9, 1978.
DN (9) Progress rept.
RD (11) Aug 1978
PG (12) 358 Pages
RS (14) FAA-RD-78-90
RN (18) GIDEP-E114-2080
RC (20) Unclassified report
DE (23) *Air traffic control systems
Aviation safety, Air traffic control terminal areas, Ground traffic,

Collision avoidance, Communication and radio systems, Terminal flight facilities, Warning systems, Beacons, Weather, Aircraft noise, Approach, Aircraft landings

ID (25) Noise abatement

AB (27) This report contains 37 papers prepared by various divisions of the Systems Research and Development Service. Reports are included from the Air Traffic Control Systems Division--En route, Terminal, and Airport surface traffic control; Communications Division; Airport Division; Flight Information Services; Aircraft and Noise Abatement Division; Approach Landing Division; and Spectrum Management Staff.

AN (1) AD-A058 549/XAG

**FG (2) 010500
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Central Flow Control System.

DN (9) Rept. for calendar year 1977-1978.

RD (11) Aug 1978

PG (12) 99 Pages

RS (14) FAA-ED-11-1A

RN (18) GIDEP-E116-1450

RC (20) Unclassified report

NO (21) Supersedes Rept. no. FAA-ED-11-1.

DE (23) *Air traffic control systems

Planning, Centralized, Management, Automation, Predictions, Air traffic control terminal areas, Regulations, Flow, Airports, Delay, Fuels, Savings, Capacity(Quantity), Logistics

ID (25) Central air traffic control system

AB (27) The Central Flow Control System is being developed as a centralized automated air traffic prediction/management system. It will regulate the flow of traffic to an airport, allow for ground holding delays, and minimize airborrn delays resulting in significant fuel savings and the smoothing of traffic flow to coincide with airport capacity. This Program Plan supersedes Engineering and Development Program Plan number FAA-ED-11-1, ATC Systems Command Center Automation, dated August 1971. (Author)

AN (1) AD-A059 412/XAG

**FG (2) 060100
060400**

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Assessment of Factors Possibly Contributing to the Susceptibility of Sickle Trait Erythrocytes to Mild Hypoxia: I. Design Considerations and Research Protocol

AU (10) McKenzie, Jess M.

RD (11) Aug 1978

PG (12) 10 Pages

RS (14) FAA-AM-78-30

RC (20) Unclassified report

DE (23) *Sickle cells, *Erythrocytes, *Hematology

Pathology, Hemoglobin, Genes, Genetics, Hypoxia, Hazards, Life expectancy, Aviation personnel, Oxygen consumption

ID (25) Sickle cell trait, Sicklemia, LPN-FAA-AM-A-77-PHY-101

AB (27) This report continues a review of the evidence for mixed dominance of the Hbs beta gene in people with the sickle cell trait. These individuals, whose erythrocytes contain a mixture of hemoglobins (HbA/HbS), are healthy and have a normal life expectancy. They are tolerant to moderate altitudes; their erythrocytes become sickled only at oxygen tensions that would be hazardous to any person. However, there is a possibility that other debilitating factors (e.g., alcoholism, pulmonary disorders) can, in a small fraction of those with the trait, produce an abnormal susceptibility to hypoxia. Those so debilitated would not be medically qualified to serve as air crewmembers. This report presents an experimental plan for estimating the proportion of such individuals in a population of young people with the sickle trait and outlines methods to be used in the study.

AN (1) AD-A059 750/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Visual Performance Assessment through Clear and Sunscreen-Treated Windows

AU (10) Welsh, Kenneth W.

Rasmussen, Paul G.

Vaughan, John A.

RD (11) Aug 1978

PG (12) 17 Pages

RS (14) FAA-AM-78-28

RC (20) Unclassified report
DE (23) *Optical coatings, *Windows, *Optical filters
Vision, Optical properties, Brightness, Vehicles, Cockpits
ID (25) LPN-FAA-AM-D-78-PHY-111
AB (27) Reflective sunscreen filters are frequently bonded to vehicle windows to reduce interior heat and brightness. The present study was conducted to investigate the optical properties of and visual performance through clear and sunscreen-treated glass panels that served as windows in an observation booth. Five combinations of external and internal brightness levels were used. Light transmission values through the clear, gold, silver, and bronze panels were 92, 20, 18, and 8 percent, respectively. Visual performance tests were conducted at 6 m (20 ft) on 12 subjects with normal visual acuity and color vision. Two tasks were conducted under brightness levels on the external display and in the subject's booth, respectively, of 1:1, 5:1, 50:1, 5:5, and 50:5 fL. Visual acuity using Landolt C figures and scores on a contour identification task were minimally impaired for any luminance ratio when the clear (control) panel was used. With the sunscreen panels, scores on both tests decreased as a function of target brightness and panel density. With one external/internal luminance RATIO(5:1), identification of signal light colors was generally impaired while viewing through sunscreen materials. Decreases were particularly evident for green and red lights presented at intermediate and low intensity levels. (Author)

AN (1) AD-A061 875/XAG
FG (2) 010309
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Conspicuity Assessment of Selected Propeller and Tail Rotor Paint Schemes
AU (10) Welsh, Kenneth W.
Vaughan, John A.
Rasmussen, Paul G.
RD (11) Aug 1978
PG (12) 26 Pages
RS (14) FAA-AM-78-29
RC (20) Unclassified report
NO (21) Original contains color plates: All DDC reproductions will be in black and white.
DE (23) *Propeller blades, *Tail rotors
Commercial aircraft, Paints, Fixed wing aircraft, Helicopters,

Propellers, Color vision, Vision, Black, Whiteout, Yellow, Red, Military research, Visibility, Safety
ID (25) Aircraft propellers, Color scheme
AB (27) An investigation was conducted to rank the conspicuity of three paint schemes for airplane propellers and two schemes tail rotor blades previously recommended by the U.S. military and British Civil Aviation Authority. Thirty volunteer subjects with normal vision viewed rotating propellers at 6.1 m (20 ft) and tail rotor blades at 9.1 m (30 ft) under bright sunlight conditions. Observations of the grouped airplanes and helicopters were made from three angles that included (i) viewing upward from a crouched position, (ii) at eye level while standing, and (iii) downward from an elevated platform. At all viewing angles, the propeller design consisting of black and white stripes asymmetrically placed on opposing blades was judged 'most conspicuous' by a wide margin. The red and white stripe design (Symmetrically placed) was considered slightly more effective than the yellow tip design. Of two designs for tail rotors, the black and white asymmetrical stripe scheme was chosen 'more conspicuous' (9 to 1 ratio) than a red, white, and black stripe design. (Author)

AN (1) AD-A062 501/XAG
FG (2) 050800
050900
060400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Psychophysiological Effects of Aging - Developing a Functional Age Index for Pilots: III. Measurement of Pilot Performance
AU (10) Gerathewohl, Siegfried J.
RD (11) Aug 1978
PG (12) 61 Pages
RS (14) FAA-AM-78-27
RC (20) Unclassified report
NO (21) See also AD-A054 356.
DE (23) *Aging(Physiology), *Pilots, *Psychophysiology
Medical examination, Physical fitness, Proficiency, Standards, Performance(Human), Indexes(Ratios), Flight maneuvers, Performance tests, Measurement, Automation, Computer applications, Monitoring, Inflight
AB (27) If a functional age index for pilots is to be developed that can be used as a criterion for extending or terminating an aviator's career, means for the assessment of pilot proficiency must be available or

devised. There are two major approaches used today; the qualitative evaluation of performance based mainly on subjective ratings, and the quantitative assessment of performance through objective recordings of pilot action and aircraft response. The qualitative rating procedure, which is still the official method authorized by the Federal Aviation Administration and other Government agencies abroad, is still popular, generally accepted, and operationally rather effective. The most advanced concept of measuring pilot performance is based on automated data recording and processing independently of or in conjunction with the judgment and interpretation of an instructor, examiner, or inspector. With all the computers and automatic data processing equipment around, pilot performance indeed can now be measured automatically, accurately, and rather reliably. Measurements already obtained this way discriminate effectively among different levels of operational requirements, demands, skills, and proficiency and are accepted by the pilots. Owing to the capability of simultaneously monitoring the performance of the human operator and the aircraft, automatic inflight monitors are the ultimate in systems design and application. Their implications for the development of a functional age index for pilots are discussed. (Author)

AN (1) AD-A086 069/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) A Systems Engineering Evaluation Method for Piloted Aircraft and Other Man-Operated Vehicles and Machines, with Hypothetical Example of a Systems Evaluation.

DN (9) Final rept.

AU (10) Higgins, Thomas H.

RD (11) 15 Aug 1978

PG (12) 49 Pages

RS (14) FAA-RD-78-78

RC (20) Unclassified report

DE (23) *Pilots, *Job analysis, *Performance(Human)

Systems engineering, Ratings, Man machine systems, Data processing, Decision making, Aviation safety

ID (25) LPN-FAA-202-553-01

AB (27) A system evaluation method is presented which systematizes and quantifies both PRP pilot rating procedures and ECP engineering calculation procedure measures of system performance on a logarithmic ratio basis of test aircraft configurations compared to a known

selected standard aircraft (vehicle) configuration. The logarithmic units $10 \log$ (ECP test/ECP std) and $10 \log$ PRP test/PRP std) used in this system evaluation method are termed 'decivals, dV' as they are 10 times the log base 10 of the ratio of the ECP and PRP values obtained during tests for the test aircraft configuration compared to the chosen standard aircraft configuration. (Author)

AN (1) AD-A056 867/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Airline Delay Trends 1972 - 1977.

DN (9) Final rept.

AU (10) Morin, Stephen

Horowitz, Seymour M.

RD (11) Jul 1978

PG (12) 51 Pages

RS (14) FAA-EM-78-11

RN (18) GIDEP-E114-0733

RC (20) Unclassified report

NO (21) See also Rept. nos. FAA-EM-11-VOL-1, AD-A015 870 and FAA-EM-11-VOL-2, AD-A019 221.

DE (23) *Air traffic, *Delay, *Airports

Estimates, Time studies, Ground support

ID (25) *Trends

AB (27) This document is an updated edition (data for the years 1976-1977 are included) of the Annual Airline Delay Trends Report published since 1974. These reports provide estimates of block, airborne, and ground delays for approximately 325 route segments connecting 20 of the most active U. S. airports, and serviced by the domestic scheduled air carriers. Delay information as presented in this summary edition consists of airborne and ground data for each of the 20 airports in the study, displayed in both table and graph form, for the years 1972 through 1977. This information was obtained from the Civil Aeronautics Board ER-586 Service Segment data in combination with other airline operational data. With this report, a new format is introduced for presenting comparative estimates of trends in airline delays. (Author)

AN (1) AD-A058 683/XAG

FG (2) 060100

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Reactions of Methamidophos with Mammalian Cholinesterase

AU (10) Robinson, Casey P.

Beiergrohslain, Donald

Smith, Paul W.

Crane, Charles R.

RD (11) Jul 1978

PG (12) 10 Pages

RS (14) FAA-AM-78-26

RC (20) Unclassified report

DE (23) *Cholinesterase inhibitors, *Reaction kinetics, *Enzymes

Catalysts, Acetylcholine, Insecticides, Protection, Toxicity, Rats, In vivo analysis, Mammals, Tissues(Biology)

ID (25) Methamidophos, Organophosphates, Atropine, Pralidoxime

AB (27) The lethality of methamidophos, a phosphoramidothioate, to rats (i.p. LD50, 15 mg/kg), is similar to that of such potent organophosphate compounds as parathion and paraoxon. Certain distinctive features of its chemical structure, and reported failure of cholinesterase inhibited with methamidophos to reactivate spontaneously in insects, prompted this study of its reactions with mammalian cholinesterase to determine if the treatment of poisoning requires modification. Atropine (10 mg/kg) or pralidoxime (60 mg/kg) afforded significant protection against lethality from methamidophos (LD50's, 60 + or - 0.4 and 52 + or - 4.9 mg/kg, respectively). Partial spontaneous recovery of inhibited cholinesterase activity was observed. However, a single dose of pralidoxime, given essentially simultaneously with methamidophos, did not hasten the recovery of cholinesterase activity. (Author)

AN (1) AD-A060 847/XAG

FG (2) 010500

200100

240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) Bibliography of Selected Publications for Aviation Planning in the Terminal Area.

RD (11) Jul 1978

PG (12) 38 Pages

RS (14) FAA-ASP-78-4, FAA-ASP-210

RC (20) Unclassified report

DE (23) *Terminal flight facilities, *Airports, *Bibliographies

Planning, Abstracts, Air traffic, Runways, Air traffic control terminal areas, Noise pollution, Statistical data, Technology forecasting, Standards, Cost analysis, Mathematical models, Air pollution

AB (27) This publication has been prepared by the Planning Application Branch in the Office of Aviation System Plans, Federal Aviation

Administration. Its purpose is to provide a listing of documents likely to be useful to persons engaged in aviation planning or decisionmaking particularly for planning on and around airports. Documents are listed in eight categories: (1) Terminal Area Statistics; (2) Standards and Criteria; (3) Terminal Area Planning; (4) Forecasts; (5) Environmental Considerations; (6) Cost/Revenue Impact; (7) Models; and (8) General. Within each category, documents are listed alphabetically and each contains a brief synopsis. (Author)

AN (1) AD-A056 098/XAG

FG (2) 120500

230600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) GPSS Computer Simulation of Aircraft Passenger Emergency Evacuations

AU (10) Garner, J. D.

Chandler, R. F.

Cook, E. A.

RD (11) Jun 1978

PG (12) 19 Pages

RS (14) FAA-AM-78-23

RC (20) Unclassified report

DE (23) *Escape systems, *Passenger aircraft

Computerized simulation, Evacuation, Emergencies, Jet transport planes, Computer programs, Statistical data, Passengers, Aircraft seats, Routing

ID (25) DC-10 aircraft, L-1011 aircraft, Boeing 747 aircraft,

LPN-FAA-AM-B-77-PRS-53

AB (27) The costs of civil air transport emergency evacuation demonstrations using human subjects have risen as seating capacities of these aircraft have increased. Repeated tests further increase the costs and also the risks of injuries to participants. A method to simulate such evacuations, by use of a computer model based on statistics from measured components of the escape path, has been developed. This model uses the General Purpose Simulation System (GPSS) computer programming language to represent various features of the escape process; e.g., seating and exit configurations, passenger mix, door-opening delays, time on escape slides, slide capacity, and redirection of passengers to

equalize escape lines. Results of simulated evacuations from the DC-10, L-1011, and B-747 aircraft and a military aircraft are reported. These results have been compared with results of certification demonstrations from the DC-10, L-1011, and B-747. Comparisons of exit size substitutions were evaluated as a means of estimating differences in escape potential for exit design optimization. (Author)

AN (1) AD-A056 693/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF ENVIRONMENTAL QUALITY

TI (6) Calculations of Maximum A-Weighted Sound Levels (dBA) Resulting from Civil Aircraft Operations.

RD (11) Jun 1978

PG (12) 69 Pages

RS (14) FAA-EQ-78-17

RC (20) Unclassified report

DE (23) *Jet engine noise, *Jet plane noise, *Computations, *Environmental impact statements, *Civil aviation Flight paths, Land use, Humans, Noise analyzers, Standards, Air traffic, Takeoff, Aircraft landings

ID (25) A-weighted sound level

AB (27) This report provides detailed guidance on assessing noise impacts in peak levels for simple noise assessment involving introduction of jet service, changes in flight tracks, and other FAA actions which have noise impacts. (Author)

AN (1) AD-A056 905/XAG

FG (2) 010301

230400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) Evaluation of Seating and Restraint Systems and Anthropomorphic Dummies Conducted During Fiscal Year 1977

AU (10) Chandler, Richard F.
Trout, Edwin M.

RD (11) Jun 1978

PG (12) 75 Pages

RS (14) FAA-AM-78-24

RC (20) Unclassified report

DE (23) *Aircraft seats, *Protective equipment

Safety belts, Crash injuries, Flight testing, Restraint, Laboratory tests, Helicopters, Aviation personnel, Anatomical models, Anthropometry

ID (25) Anthropomorphic dummies, Dummies(Human)

AB (27) The results of test programs conducted by the Protection and Survival Laboratory to investigate the performance of prototype or operational seating and restraint systems relative to their ability to provide protection against crash injury and to investigate the performance of anthropomorphic dummies in the dynamic environment are reported. The data in this report were previously presented as the final quarterly progress report for Task AM-B-77-PRS-47 and are subject to additional evaluation or change on review, conduct of additional testing, or receipt of additional facts. (Author)

AN (1) AD-A058 546/XAG

FG (2) 010305

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Aircraft Safety.

DN (9) Rept. for period ending Dec 77.

RD (11) Jun 1978

PG (12) 39 Pages

RS (14) FAA-ED-18-1A

RN (18) GIDEP-E116-2478

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-ED-18-1, AD-765 009.

DE (23) *Transport aircraft, *Aviation safety, *Jet transport planes, *Fire safety Planning, Requirements

AB (27) The Aircraft Safety Program Engineering and Development Plan describes the objectives, the scope of work and the funding requirements to meet the Federal Aviation Administration's research need in aircraft safety for the 1978-85 period. The Plan covers work in Fire Safety, Transport Safety, and General Aviation Aircraft Safety. Although Aviation Security is included in Program 18, it is reported under Engineering and Development Plan ED-18-2. (Author)

AN (1) AD-A058 548/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) National Plan for Development of the Microwave Landing System - June 1978 Update.

RD (11) Jun 1978

PG (12) 98 Pages

RS (14) FAA-ED-07-2A

RN (18) GIDEP-E116-0891

RC (20) Unclassified report

DE (23) *Microwave landing systems

Civil aviation, Military applications, Global, Planning, Long range(Time), Prototypes

ID (25) Development

AB (27) An updated plan for the development of an interoperable civil/military microwave landing system (MLS) is presented. The original plan delineated a five (5) year program of integrated activity deemed necessary to provide a MLS that meets the wide range of user operational requirements. The substance of the work and the goals achieved under the initial plan have occurred essentially as planned except for the schedule. The TRSB (Time Reference Scanning Beam) technique selection was made about one year later than originally planned and considerable time and resources were devoted to ICAO activities that were not initially envisioned. A major milestone in the MLS program was achieved in April 1978 at the All Weather Operations Divisional meeting of ICAO, when the U.S. TRSB system was selected to be the standard system for international civil use as a replacement for ILS.

AN (1) AD-A058 996/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) False Discrete Targets in the En Route System.

DN (9) Final rept.

AU (10) Shannon,James A.

RD (11) Jun 1978

PG (12) 114 Pages

RS (14) FAA-RD-78-72

RN (18) GIDEP-E117-2266

RC (20) Unclassified report

NO (21) See also Rept. no. FAA/RD-77/12-4, AD-A056 941.

DE (23) *Plan position indicators, *False targets, *Air traffic control systems, *Radar beacons

Backlobes, Radar pulses, Radar targets, Aerial targets, Multipath transmission, Target discrimination

ID (25) Ringaround targets, Radar transponders, Range bins, Split targets, Multipath targets, LPN-FAA-122-111-02

AB (27) This report describes the results of a two year study concerning the problem of false discrete target reports which appear in en route system. False target rates from selected secondary radar sites in the en route system are given. Six candidate fixes which attack the problems associated with these rates are examined. False reports are divided into ringaround, splits, and reflections. A false report not classified as a ringaround or a split is classified as a reflection. Several fixes against the ringaround type of false target are available and one of them, based on the double coverage provided in the en route system, is recommended for implementation. A fix against the split type of false target report is available and consideration of implementation is recommended. A fix against the reflection type of false target is recommended in the special case where the physical reflector can be identified. (Author)

AN (1) AD-A063 842/XAG

FG (2) 010400

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION POLICY

TI (6) Terminal Area Forecasts, Fiscal Years 1979-1990

AU (10) Kruzic,Pamela G.

Henry,Thomas F.

Wine,Carlton R.

RD (11) Jun 1978

PG (12) 469 Pages

RS (14) FAA-AVP-78-6

RC (20) Unclassified report

DE (23) *Forecasting, *Airports, *Management planning and control, *Air traffic Decision making, Regions, Data acquisition, Tables(Data)

AB (27) This document presents forecasts of key aviation activity measures for 905 airports and radar approach control facilities through the year 1990. The report is organized in two major parts. The first part is a general summary and includes summary highlights, the introduction, a brief overview of the forecast methodology and an extensive series of

summary tables and charts. This summary provides a useful national overview as well as a comparison among regions. Part two contains the forecasts for each airport. It is arranged alphabetically by FAA region and within each region by state. The airports in each state are listed alphabetically by community and included summary information for the facility followed by annual projections for fiscal years (FY) 1979 through 1990. The summary indicates the airports tower/nontower status, daily hours of tower operations, presence of commuter passenger service, the number of aircraft based at the airport and the 1977 military operations.

AN (1) AD-A063 871/XAG

FG (2) 010500

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION POLICY

TI (6) Annual FAA Forecast Conference Proceedings (3rd).

RD (11) Jun 1978

PG (12) 69 Pages

RS (14) FAA-AVP-78-7

RC (20) Unclassified report

DE (23) *Airports, *Civil aviation

Air traffic, Forecasting, Planning, Decision making, State government, Geographical distribution, Terminal flight facilities, Air traffic control systems

ID (25) Local government

AB (27) This conference proceedings document is the latest step in the FAA's continuing initiative to improve the usefulness of its aviation forecasts for decisionmaking and planning by the aviation community. It attempts to capture the commentary from participants at the Third Annual FAA Forecasting Conference (December 1977--Reston, Virginia) and to summarize FAA responses. The document is organized into two parts. Part I, Forecasting Initiative Overview, discusses commentary from the aviation community, followed by the FAA response. Part II, Proceedings, presents remarks by conference participants. In total, this document updates the dialog between the FAA and members of the aviation community and general public in the joint effort to define the most useful and appropriate aviation forecasting system. (Author)

AN (1) AD-A067 924/XAG

FG (2) 010309

010500

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) Airport Activity Statistics of Certificated Route Air Carriers.

DN (9) Semi-annual rept. for period ending 30 Jun 78.

RD (11) 30 Jun 1978

PG (12) 312 Pages

RC (20) Unclassified report

NO (21) Prepared in cooperation with Civil Aeronautics Board, Washington, DC.

DE (23) *AIRPORTS, *COMMERCIAL AVIATION, *STATISTICAL DATA

AIR TRANSPORTATION, AIR TRAFFIC, PASSENGER AIRCRAFT, CARGO HANDLING,

POSTAL SERVICE, INTERNATIONAL, AIRCRAFT LANDINGS, TABLES(DATA)

AB (27) This report furnishes airport activity of the Certificated Route Air Carriers. Included in the data are passenger enplanements, tons of enplaned freight, express, and mail. Both scheduled and non-scheduled service, and domestic and international operations are included. These data are shown by airport and carrier. Departures by airport, carrier and type of operation, and type of aircraft are included. (Author)

AN (1) AD-A057 122/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Discrete Address Beacon System (DABS).

RD (11) May 1978

PG (12) 43 Pages

RS (14) FAA-ED-03-1

RN (18) GIDEP-E110-0722

RC (20) Unclassified report

DE (23) *Discrete address beacon systems, *Air traffic control systems, *Aerial reconnaissance

Electromagnetic compatibility, Radio beacons, Systems engineering, Automation, Data links, Communication and radio systems, Performance tests, Control systems, Computer programs

AB (27) The DABS development program consists of three major phases - System Design and Validation, Engineering Development, and Production Deployment. A single sensor design compatible with ATCRBS, including

an integral data link, was realized. This effort resulted in developing engineering requirements for procurement of three industry built engineering model DABS sensors for further engineering development in the current phase of the program. This phase is system oriented, focusing on investigations of such problems as multiple sensor coordination, target hand-off, ARC interface and procedures, failure mode operation, ATARS(Formerly ipc) operation, etc. The experiments and tests will result in two technical data packages, one for single site and one for network operations for hand-off to the operational services for production implementation. This document addresses primarily the second phase of the DABS development program since deployment is dependent upon efforts related to the decision to implement DABS and the attendant transition planning.

AN (1) AD-A084 868/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) General Aviation: Hours Flown and Avionics Purchase Decisions.

DN (9) Staff study

AU (10) Vahovich, Stephen G.

RD (11) May 1978

PG (12) 143 Pages

RS (14) FAA-AVP-78-9

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-AVP-76-9, AD-A035 144.

DE (23) *Civil aviation

Aircraft, Operation, Time, Costs, Income, Corporations, Avionics, Radio navigation

ID (25) *General aviation

AB (27) Using data from the Federal Aviation Administration's (FAA) national sample of general aviation (GA) aircraft owners, this staff study explores separately the factors that influence aircraft owners' hours flown decisions and factors influencing avionics equipage. Five different hours flown measures are utilized. Chapter 2 concentrates on the importance of aircraft owners' income and operating cost in the hours flown decisions of noncompany owners. Chapter 3 broadens the scope of the hours flown analysis by including company and noncompany owners, and discusses the importance of factors other than income and cost. Chapter 4 presents the factors that differentiate avionics equipped from nonequipped aircraft. Based on these factors a 'system' is developed to predict avionics equipage for each of eight different types of avionics. (Author)

AN (1) AD-A054 356/XAG

FG (2) 050800

060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Psychophysiological Effects of Aging - Developing a Functional Age Index for Pilots. II Taxonomy of Psychological Factors

AU (10) Gerathewohl, Siegfried J.

RD (11) Apr 1978

PG (12) 76 Pages

RS (14) FAA-AM-78-16

RC (20) Unclassified report

NO (21) See also AD-A040 322.

DE (23) *Psychophysiology, *Aging(Physiology), *Pilots

Indexes(Ratios), Literature surveys, Psychological tests, Performance tests, Medical examination, Biostatistics, Aviation medicine, Commercial aviation

AB (27) One of the major objectives of gerontological aviation psychology is to determine the psychological variables, functions, abilities, skills, and factors that underlie, constitute or are associated with pilot performance and proficiency. They must be identified, analyzed, and measured if functional age is to be substituted for chronological age as a criterion for terminating an aviator's career. The approaches used consist of (a) the analysis of successful pilot behavior as displayed under simulated and operational conditions, (b) the analysis of unsuccessful pilot behavior (pilot error) as related to aircraft accidents, (c) the evaluation of pilot performance during the selection and training procedures as reported in the literature. By means of factor analyses, logical deductions, and clinical interpretations of the results obtained by various investigators, 14 factors are identified and described, namely (1) perception, (2) attention, (3) reaction, (4) orientation, (5) sensorimotor, (6) stamina, (7) cognition/mentation, (8) interpersonal relations, (9) decision making, (10) experience, (11) learning, (12) personality, (13) mechanical ability, and (14) motivation.

AN (1) AD-A054 606/XAG

FG (2) 250200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Frequency Spectrum Management.

RD (11) Apr 1978

PG (12) 35 Pages

RS (14) FAA-ED-21-4

RC (20) Unclassified report

DE (23) *Radiofrequency, *Spectra, *Management planning and control, *Frequency allocation

Electromagnetic compatibility, Policies, Standards, organizations

AB (27) This program plan describes spectrum management activities supporting aviation's use of the frequency spectrum. Long range spectrum planning is provided through coordination with national and international organizations. Policy, criteria, and standards are provided to spectrum users to ensure efficient spectrum utilization. Electromagnetic compatibility analyses and representation in national/international forums are provided to ensure the suitability of available spectrum. New measurement and analysis techniques are provided to improve overall spectrum management. The Frequency Spectrum Management element is divided into three subprograms. The Radar/Beacon Spectrum Planning subprogram includes projects for radar, ATCRBS, and DABS. The Communications/Navigation Spectrum Planning subprogram includes projects for navigation, CAS, communications, MLS, and satellites. The Spectrum Applications Engineering subprogram includes projects for RF propagation, spectrum surveillance, spectrum coordination, electromagnetic radiation measurements, and the exercising of specialized models and computer programs developed as functional tools of spectrum management.

AN (1) AD-A054 793/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) The Effects of Altitude and Two Decongestant-Antihistamine Preparations on Physiological Functions and Performance

AU (10) Higgins, E. A.

Chiles, W. D.

McKenzie, J. M.

Jennings, A. E.

Funkhouser, G. E.

RD (11) Apr 1978

PG (12) 17 Pages

RS (14) FAA-AM-78-19

RN (18) XH-FAA

RC (20) Unclassified report

AL (22) Approved for public release; distribution is unlimited.

DE (23) *RESPONSE(BIOLOGY)

TIME DEPENDENCE, PERFORMANCE(HUMAN), COMPARISON, PHYSIOLOGICAL EFFECTS,

MOTIVATION, DRUGS, ALTITUDE, PSYCHOMOTOR TESTS, SUPPRESSORS, ANTIHISTAMINICS

ID (25) DECONGESTANTS, MULTIPLE TASK PERFORMANCE, BATTERY, LPN-FAA-AM-A-

77-PHY-100, LPN-FAA-AM-A-77-PSY-65

AB (27) Fourteen men were studied to determine the combined effects of two altitudes (ground level (1,274 ft) and 12,500 ft), and three preparations (lactose placebo, Compound A (Actifed - Registered Trade Name), and Compound B (Dristan - Registered Trade Name). Physiological data show that A was a stimulant and B a depressant. Subjects reported least subjective attentiveness with A and greatest with lactose. Significant time effects were evident in subjective ratings (increasing fatigue and decreasing energy interest, and attentiveness). The Multiple Task Performance Battery (MTPB) showed no effects of altitude, drugs, or time on overall performance; however, performance declined from the first to the second hour in several tasks, while problem solving improved. The data are compatible with reported decreasing interest and attentiveness; subjects enjoyed the problem-solving tasks and may have given those tasks preference as their levels of interest declined. Though performance on the MTPB, with the drug doses evaluated, did not produce any changes in the overall composite scores earned by these healthy subjects, the results from physiological parameters and some subjective evaluation indicate that time after ingestion and type of compound ingested are important. Declines in energy and attentiveness 2 1/2 h after ingestion could result in neglect of important although routine tasks. Hypoxia might enhance this effect and consequences might be worse in subjects whose medical conditions require these drugs. (Author)

AN (1) AD-A054 794/XAG

FG (2) 060400

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Aeromedical Implications of the X-Chrom Lens for Improving Color Vision

Deficiencies

- AU (10) Welsh, Kenneth W.
Vaughan, John A.
Rasmussen, Paul G.
- RD (11) Apr 1978
- PG (12) 24 Pages
- RS (14) FAA-AM-78-22
- RC (20) Unclassified report
- DE (23) *Aerospace medicine, *Eyeglasses, *Color vision, *Optical lenses
Signal lights, Test and evaluation, Deficiencies, Visual perception,
Clinical laboratories, Aviation safety
- ID (25) Contact lenses, LPN-FAA-AM-A-77-PHY-104
- AB (27) The X-Chrom contact lens is a recent device recommended to improve defective color vision. The red lens is usually worn on the nondominant eye and may require extended wearing for optimum color vision enhancement. A battery of tests was given to 24 individuals, 12 with normal and 12 with defective color vision. A mix was made between standard clinical color vision tests, spectral signal light tests, and visual/oculomotor performance tests. Between the first and second evaluations (approximately 7 weeks), individuals with defective color vision wore X-Chrom contact lenses for 6 hours each day. While wearing X-Chrom lenses, subjects had significantly improved scores on standard clinical pseudoisochromatic plate tests, including the Hardy-Rand-Rittler, Ishihara, and Dvorine plates. Our data indicated that color identification scores using the Farnsworth Lantern, Color Threshold Tester, and the Aviation Signal Light Gun were not significantly different for evaluations made with and without the X-Chrom lens. Minimal changes were found on several tests including the Farnsworth D-15, aeronautical chart color identification task, Holmgren Yarn, visual acuity, phorias, and stereoscopic depth perception. The majority of control and experimental subjects noted a change in the perceived path of the swinging pendulum (Pulfrich test) while viewing through a monocular red filter or an X-Chrom lens, respectively.
(Author)
- AN (1) AD-A054 795/XAG
FG (2) 050800
060400
- CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
- TI (6) Experimental Attempts to Evoke a Differential Response to Different Stressors

- AU (10) Melton, C. E.
McKenzie, J. M.
Saldivar, J. T.
Wicks, S. M.
- RD (11) Apr 1978
- PG (12) 7 Pages
- RS (14) FAA-AM-78-18
- RC (20) Unclassified report
- DE (23) *Response(Biology), *Exercise(Physiology)
Performance(Human), Air traffic controllers, Tolerances(Physiology),
Work measurement, Heart rate, Urinary system, Comparison
- ID (25) Urinary metabolites, LPN-FAA-AM-C-77-PHY-103
- AB (27) Ten paid male subjects each worked at a physical task with no competitive element (treadmill) and a competitive task ('Pong') with minimal physical activity. There were three work periods, each 50 min long. Ten minutes were allowed for rest and urine collection after each work period. The experimental period lasted 3 h. Urine was analyzed for 17-ketogenic steroids (17-KGS), epinephrine (E), and norepinephrine (NE). Heart rates were derived from ambulatory electrocardiograms. There were no statistically significant differences in excretion of urinary metabolites during corresponding episodes of the two tasks. Heart rates were significantly higher during treadmill work than during Pong playing. Rest-to-work differences show that the increment in E excretion is significantly greater during the Pong task than during the treadmill task. Rest-to-work differences in excretion of 17-KGS and NE are not significant. The rest-to-work increase in heart rate is significant for treadmill, but not for Pong. The increase in epinephrine excretion strengthens the conclusion drawn from field experiments that this measurement is the best indicator of the intensity of air traffic control work per se. (Author)
- AN (1) AD-A054 796/XAG
FG (2) 080200
- CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
- TI (6) Comparative Readability of Enroute Low Altitude Charts with and without Terrain Depiction
- AU (10) Rasmussen, Paul G.
Welsh, Kenneth W.
Vaughan, John A.
- RD (11) Apr 1978
- PG (12) 16 Pages

RS (14) FAA-AM-78-17
RC (20) Unclassified report
DE (23) *Navigation charts, *Reading, *Accuracy
Terrain, Contrast, Brightness, Alphanumeric data, Test methods,
Aviation safety
ID (25) LPN-FAA-AM-A-78-PHY-95
AB (27) The U.S. National Ocean Survey has issued an experimental copy of Enroute Low Altitude Chart L-3/4 dated April 21, 1977, as part of a program to explore the feasibility of introducing terrain depiction on the charts. The FAA's Air Traffic Service (AAT-1) requested the Office of Aviation Medicine to determine what derogatory effects such a change might have on the usability of the charts. It was found in the study that shaded terrain depiction reduces readability of alphanumeric data as measured by increases in reading errors and reading time. Losses are attributed to the low figure-to-ground contrast ratios between the chart legends and the terrain background. Losses are most pronounced for alphanumeric data printed in small character sizes and with light inking densities. Losses are also evident for some large character sizes and heavy inking densities where mountainous terrain is depicted by heavy inking densities. Losses are particularly evident under low luminance levels but also occur to a lesser extent at elevated luminance levels. Differences between the experimental and standard versions of the charts are least pronounced when the terrain depiction introduced only a moderate reduction in figure-to-ground contrast level and the items were viewed at elevated luminance levels. (Author)

AN (1) AD-A055 089/XAG
FG (2) 061500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION
MEDICINE
TI (6) Cardiorespiratory Assessment of Decongestant-Antihistamine Effects on Altitude, +Gz, and Fatigue Tolerances
AU (10) Lategola, Michael T.
Davis, Audie W., Jr
Lyne, Peggy J.
Burr, Mary J.
RD (11) Apr 1978
PG (12) 26 Pages
RS (14) FAA-AM-78-20
RN (18) XH-XD
RC (20) Unclassified report
AL (22) Approved for public release; distribution is unlimited.

DE (23) *ANTIHISTAMINICS
PILOTS, RESPIRATORY SYSTEM, ALTITUDE, CARDIOVASCULAR SYSTEM, FATIGUE(PHYSIOLOGY)
AB (27) Decongestants and antihistamines are known to produce effects capable of adversely modifying physiological function and psychomotor task performance. Because of relevance to safe pilot performance, the effects of single doses of two decongestant-antihistamine preparations (Compound A and Compound B), or a placebo on cardiorespiratory responses to two equally spaced +2Gz tests during separate 2-hour exposures at ground level (GL) (1, 274 ft MSL) and 12,500 ft chamber altitude were assessed. Postaltitude fatigue was assessed by cardiorespiratory responses to submaximal bicycle ergometry. Compound A and Compound B appeared to exert no significant detrimental effects on short-duration postaltitude ergometric fatigability. With two exceptions, all combinations of medication, altitude, and +Gz were well tolerated. Two subjects were clearly incapacitated during the first +2Gz test under Compound A at 12,500 ft altitude. It is felt that the +Gz intolerance resulted mainly from an adverse interactive effect of Compound A and altitude on vasomotor and/or chronotropic mechanisms.

AN (1) AD-A056 053/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) The Morbidity Experience of Air Traffic Control Personnel, 1967-1977
AU (10) Booze, Charles F.
RD (11) Apr 1978
PG (12) 34 Pages
RS (14) FAA-AM-78-21
RC (20) Unclassified report
DE (23) *Air traffic controllers, *Diseases
Morbidity, Health, Pathology, Hearing, Vision, Statistical data
AB (27) The morbidity experience of 28,086 air traffic controllers has been examined from 1967-77 with particular emphasis given the potential effects of job demands on ATC Health. The morbidity experience of air traffic controllers does not appear excessive when compared with the experience of other outside groups studied, except for psychoneurotic disorders. While some isolated trends found in these data are supportive of an occupation disease relationship, they are neither impressive nor consistent, as would be expected if the association were a strong one. Quantification of the substantial differences was found to exist in the incidence of disease before and after the second-career

legislation. While job and salary protection considerations obviously explain some of the difference, the importance of examination and screening techniques, which are not as dependent on reliable medical history, are emphasized for both air traffic control personnel and the general airman population in an environment in which a major justification for the periodic health examination is the protection of individuals other than the examinee.

AN (1) AD-A056 930/XAG

FG (2) 010200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING M ANAGEMENT

TI (6) The FAA Concept for a Beacon Collision Avoidance Systems (BCAS). Volume

I. Executive Summary

AU (10) Koenke, E. J.

Kleiman, L.

Lucier, E.

Schuchman, L.

Theford, W.

RD (11) 17 Apr 1978

PG (12) 81 Pages

RS (14) FAA-EM-78-5-1

RN (18) GIDEP-E110-0263

RC (20) Unclassified report

DE (23) *TRANSPONDERS, *COLLISION AVOIDANCE

AIRBORNE, BEACONS, SIMULATION, AIRCRAFT EQUIPMENT, DIRECTIONAL ANTENNAS, RADAR ANTENNAS, SYNCHRONIZATION(ELECTRONICS)

ID (25) Beacon Collision Avoidance System(BCAS), BCAS(Beacon Collision Avoidance System)

AB (27) A unique airborne aircraft collision avoidance system concept is presented which assures safe separation from the largest possible percentage of potential collision threats. The concept is designed to operate in all airspace as a compatible backup to the present and evolving ATC system, and to be acceptable to the pilot and the user community. The system concept capitalizes on the aviation community's large existing investment in ATCRBS transponders and on the ground based beacon surveillance system network for the basic sources of the collision avoidance information. The report is contained in three volumes; an Executive Summary (I), Concept Description (II) and Appendices (III). (Author)

AN (1) AD-A059 535/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) The FAA Concept for a Beacon Collision Avoidance System (BCAS). Volume

II. Concept Description

AU (10) Koenke, E. J.

RD (11) 17 Apr 1978

PG (12) 268 Pages

RS (14) FAA-EM-78-5-2

RN (18) GIDEP-E120-1839

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A056 930.

DE (23) *Collision avoidance, *Air traffic control systems, *Discrete address beacon systems, *Transponders
Directional antennas, Air space, Flight paths, Signal processing, Message processing, Data links, Synchronization(Electronics), Radar beacons, Algorithms

ID (25) Beacon collision avoidance systems, BCAS(Beacon Collision Avoidance Systems)

AB (27) A unique airborne aircraft collision avoidance system concept is presented which assures adequate separation from the largest possible percentage of potential collision threats. The concept operates in all airspace as a compatible backup to the present and evolving ATC system, and is acceptable to the pilot and the user community. The system concept capitalizes on the aviation community's large existing investment in ATCRBS transponders and on the ground based beacon surveillance system network for the basic sources of the collision avoidance information.

AN (1) AD-A061 948/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING M ANAGEMENT

TI (6) FAA BCAS Concept. Volume IIIA. Appendices A-E

AU (10) Koenke, E. J.

RD (11) Apr 1978

PG (12) 458 Pages

RS (14) FAA-EM-78-5-III-A

RN (18) GIDEP-E132-2057
RC (20) Unclassified report
NO (21) See also Volume 3B, Appendices F-M, AD-A061 949. Includes an envelope containing a chart. Supplement to Rept. nos. GIDEP-E110-0263 and GIDEP-E120-1839.
AL (22) Availability: Document partially illegible.
DE (23) *COLLISION AVOIDANCE, *AIR TRAFFIC CONTROL SYSTEMS, *DISCRETE ADDRESS
BEACON SYSTEMS, *TRANSPONDERS
AIR TRAFFIC, DENSITY, RADAR BEACONS, AREA COVERAGE, LOW ALTITUDE, RADIOFREQUENCY INTERFERENCE, INTERROGATOR TRANSMITTERS,
ACCURACY,
COMPUTERIZED SIMULATION
ID (25) BCAS(Beacon Collision Avoidance System), Garble
AB (27) A unique airborne aircraft collision avoidance system concept is presented which assures adequate separation from the largest possible percentage of potential collision threats. The concept operates in all airspace as a compatible backup to the present and evolving ATC system, and is acceptable to the pilot and the user community. The system concept capitalizes on the aviation community's large existing investment in ATCRBS transponders and on the ground based beacon surveillance system network for the basic sources of the collision avoidance information. The appendices in this volume include: Garble; BCAS Mode Selection; Traffic Models and Aircraft densities; Radar coverage; and BCAS Accuracy Analysis.
23

AN (1) AD-A061 949/XAG
FG (2) 170703
170900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS
ENGINEERING MANAGEMENT
TI (6) FAA BCAS Concept. Volume III B. Appendices F - M
AU (10) Koenke,E. J.
RD (11) Apr 1978
PG (12) 323 Pages
RS (14) FAA-EM-78-5-III-B
RC (20) Unclassified report
NO (21) See also Volume 3A, Appendices A-E, AD-A061 948 and Volume 1, A056 930.
DE (23) *Collision avoidance, *Air traffic control systems, *Discrete address beacon systems
Radar antennas, Directional antennas, Position finding, Algorithms,

Computerized simulation
ID (25) BCAS(Beacon Collision Avoidance System), ATCRBS(Air Traffic Control Radar Beacon System)
AB (27) For complete abstract see AD-A061 948. Appendices in this volume include: Passive Position Determination Procedure, Single Site ATCRBS/RBX; SSR North Directional Errors and Their Influence on BCAS Performance; The BCAS Antenna; BCAS Problems Solved via the Directional Antenna; Supplementary Detail on Reply Processor; BCAS Collision Avoidance Algorithms; ATARS-BCAS Interface Algorithms; and Simulations of BCAS Performance vs Measurement Error.

AN (1) AD-B032 801/XAG
FG (2) 010500
200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) Federal Aviation Administration Integrated Noise Model.
RD (11) Apr 1978
PG (12) 18 Pages
RN (18) GIDEP-E094-2036
RC (20) Unclassified report
NO (21) Original contains color plates; All DDC reproductions will be in black and white.
AL (22) Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; 5 Jan 79. Other requests for this document must be referred to Officer-in-Charge, GIDEP Operations Center, Corona, CA 91720.
DE (23) *Aircraft noise, *Noise pollution, *Computerized simulation, *Terminal flight facilities
Airports, Civilian population, Health physics, Flight paths, Jet engine noise
DL (33) 03

AN (1) AD-A053 223/XAG
FG (2) 010300
230500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Human Respiratory Considerations for Civil Transport Aircraft System
AU (10) McFadden,E. B.
RD (11) Mar 1978
PG (12) 21 Pages
RS (14) FAA-AM-78-9

RC (20) Unclassified report
DE (23) *Life support systems, *Oxygen equipment, *Respiratory system Engineering, Requirements, Maintenance, Emergencies, Aircraft equipment, Passengers, Flight crews, Standards, high altitude, Civil aviation
AB (27) This report is intended to acquaint personnel involved in the design, inspection, and maintenance of civil transport oxygen systems with the human respiratory requirements and oxygen system design considerations necessary to effect an interface and provide acceptable high-altitude life support. Simplified explanations and language that should be understandable by lay and semiprofessional engineering personnel are used, with references to sources of more detailed information. The oxygen system designer is directed to applicable Federal Aviation Regulations pertaining to oxygen systems and, where regulatory guidance does not exist, directs the reader to applicable oxygen equipment industry practices, standards, and information reports. (Author)

AN (1) AD-A053 230/XAG

**FG (2) 010600
050800**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Spatial Disorientation in General Aviation Accidents

AU (10) Kirkham, William R.
Collins, William E.
Grape, Paula M.
Simpson, James M.
Wallace, Terry F.

RD (11) Mar 1978

PG (12) 16 Pages

RS (14) FAA-AM-78-13

RC (20) Unclassified report

DE (23) *Perception(Psychology), *Orientation(Direction), *Pilots, *Aviation accidents
Fixed wing aircraft, Lightweight, Civil aviation, Weather, Visibility, Statistical data, Statistical analysis, Psychophysiology, Aviation safety

ID (25) LPN-FAA-AM-B-77-TOX-23, LPN-FAA-AM-B-78-TOX-23

AB (27) Spatial disorientation (SD) refers to an incorrect self-appraisal of the attitude or motion of the pilot and his aircraft with respect to the earth. This paper defines elements of SD problems as encountered in general civil aviation. Accident reports made by the National

Transportation Safety Board for a recent 6-year period were reviewed. Statistical computations were made relating SD to fatal accidents. Small fixed-wing aircraft (under 12,500 lb) accounted for 97.3 percent of all SD accidents. Inclement weather was associated with 42 percent of all fatal accidents, and SD was a cause or factor in 35.6 percent of these cases. Non-instrument-rated pilots were involved in 84.7 percent of SD weather-involved accidents. These and other data attest to the importance of this psychophysiological phenomenon (SD) in flight safety. Suggestions are made of ways to improve pilots' awareness and understanding of this problem.

AN (1) AD-A053 565/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Child Restraint Systems for Civil Aircraft

AU (10) Chandler, Richard F.
Trout, Edwin M.

RD (11) Mar 1978

PG (12) 43 Pages

RS (14) FAA-AM-78-12

RC (20) Unclassified report

DE (23) *Aircraft seats, *Harnesses
Restraint, Children, Passenger vehicles, Aviation safety, Simulators, Test and evaluation

ID (25) LPN-FAA-AM-B-77-PRS-47

AB (27) Child restraint systems have been developed to provide protection to children involved in automobile crashes. These systems are not yet approved for use in civil aircraft. Six typical systems were exposed to controlled impacts on a test sled to simulate aircraft crash conditions; these systems were inverted to simulate turbulence. A special test seat was developed to represent an aircraft passenger seat for these tests. The results of the tests and characteristics of the child restraint systems that are critical for civil aircraft applications are discussed. (Author)

AN (1) AD-A053 674/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) A Comparison of the Vigilance Performance of Men and Women Using a Simulated Radar Task

AU (10) Thackray, Richard S.

Touchstone, R. Mark

Bailey, J. Powell

RD (11) Mar 1978

PG (12) 12 Pages

RS (14) FAA-AM-78-11

RC (20) Unclassified report

DE (23) *Vigilance, *Air traffic controllers

Males, Females, Performance(Human), Attention, Monitoring, Radar operators, Mental ability, Fatigue(Physiology), Alphanumeric displays, Students

ID (25) Sex differences

AB (27) The present study examined the question of possible sex differences in the ability to sustain attention to a complex monitoring task requiring only a detection response to critical stimulus changes. The visual display was designed to approximate a futuristic, highly automated air traffic control radar display containing computer-generated alphanumeric symbols. Twenty-six men and an equal number of women were each tested over a 2-hour session. Sixteen targets appeared on the screen at all times, with 10 signals (a designated change in the alphanumerics) randomly presented during each half hour of the test session. Detection latency to the signals increased significantly during the session, but there was no evidence of any significant difference between the sexes in the magnitude or pattern of this increase. The results are discussed in terms of a general decline in alertness that was apparently equal for both sexes. (Author)

AN (1) AD-A054 450/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Comparison of the Visual Perception of a Runway Model in Pilots and Nonpilots during Simulated Night Landing Approaches

AU (10) Mertens, Henry W.

RD (11) Mar 1978

PG (12) 25 Pages

RS (14) FAA-AM-78-15

RC (20) Unclassified report

DE (23) *Night landings, *Night vision

Runways, Approach, Illusions, Aircraft landings, Pilots, Glide path

systems, Adjustment(Psychology)

ID (25) Parallax

AB (27) At night, reduced visual cues may promote illusions and a dangerous tendency for pilots to fly low during approaches to landing. Relative motion parallax (a difference in rate of apparent movement of objects in the visual field), a cue that can contribute to visual judgments of glide path angle, was studied for its effect on the nighttime approach problem in two experiments. Neither flying experience nor a visual frame of reference enhanced sensitivity to relative motion parallax. However, errors in horizontal adjustments were smaller in pilots, indicating that flying experience enhances other cues in the runway image. Direct judgments of approach angle magnitude indicated overestimation by an approximate factor of 2. These findings give further evidence of large visual illusions in the nighttime situation and indicate that the ineffectiveness of relative motion parallax may be an important part of the night approach problem.

AN (1) AD-A054 938/XAG

FG (2) 050900

230500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Three-Dimensional Anthropometry of the Adult Face

AU (10) Young, J. W.

Pinski, M. S.

RD (11) Mar 1978

PG (12) 42 Pages

RS (14) FAA-AM-78-14

RC (20) Unclassified report

DE (23) *Oxygen masks, *Anatomical models, *Anthropometry

Three dimensional, Face(Anatomy), Performance tests, Performance(Human), Performance(Engineering), Aviation safety, Aircraft, Mechanical components, Head(Anatomy), Males, Females, Data acquisition

AB (27) This study describes a new three-dimensional anatomical axis system based on four conventional anthropometrical face landmarks. Coincident as a coordinate (orthogonal) axis system, this reference system was developed to provide convenient orientation of the head segment and any surface landmark in three-dimensional space for direct comparisons with subject populations. Forty-four anthropometric landmarks on the face and adjacent areas are defined and measured on 30 adult female and male test subjects participating in a study to evaluate protective breathing

equipment. These data provide a basic data base for test subject selections, dimensional correlations of face types with equipment performance, and preliminary design criteria (gross structure dimensions) for dummy test devices and protective-type breathing equipment. Individual sets of data points for each subject are presented in tabular format for the convenience of data use. These data describe only a mid-range adult population and do not represent the dimensional range or combinations of facial characteristics typical of children or older adults. (Author)

AN (1) AD-A055 009/XAG
FG (2) 050600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Relationship of Predevelopmental '150' Training with Noncompetitively Selected Air Traffic Control Trainees to FAA Academy Success

AU (10) Boone, James O.
RD (11) Mar 1978
PG (12) 25 Pages
RS (14) FAA-AM-78-10
RC (20) Unclassified report
DE (23) *Training, *Air traffic controllers
Minorities, Females, Background, Teaching methods, Ratings, Analysis of variance

AB (27) Past studies have demonstrated that women and minorities are less likely to be selected as FAA air traffic controllers than are nonminority men, and, when selected, are less likely to be successful. One major reason for this is that women and minorities have less aviation-related background experience. In response to this need the '150' Predevelopmental program was begun to give those selected for the program a 1-year orientation to aviation and air traffic control prior to FAA Academy training. The purpose of this research was to study the unique relationship between Predevelopmental training and Academy success. An overview of the relationships between various background characteristics, selection measures, Predevelopmental training measures, and Academy measures was first computed. Then, through path analysis the significant relationships were considered simultaneously to determine the unique relationship between Predevelopmental training and Academy success. The path models indicated that Predevelopmental training overall does enhance a trainee's potential for Academy success with a possible differential effect according to minority status.

(Author)

AN (1) AD-A056 770/XAG

FG (2) 010309

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan Advanced Integrated Flight Systems (AIFS).

DN (9) Rept. for period ending Mar 78.

RD (11) Mar 1978

PG (12) 84 Pages

RS (14) FAA-ED-18-3

RN (18) GIDEP-E105-0313

RC (20) Unclassified report

DE (23) *Flight control systems, *Jet transport planes
Commercial aircraft, Digital systems, Avionics, Airworthiness, Aviation safety, Standards, Integrated systems, Data bases

AB (27) It appears that active controls and digital flight control and avionics will significantly impact transport aircraft technology, and therefore, FAA must examine the impact of these advances on airworthiness criteria. To comply with its charged responsibilities, the FAA must stay abreast of technology advancements and establish the necessary safety standards. In the areas of active controls technology and digital flight control and avionics, a technology program entitled 'Advanced Integrated Flight Systems' (AIFS) has been established to support this responsibility. The AIFS Technology Program will provide for the acquisition or development of the generic data base from which the Flight Standards Service may develop airworthiness criteria and compliance procedures for aircraft and equipment evolving from the application of advanced integrated flight systems technology.

AN (1) AD-A110 442/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. 1 Jul-31 Dec 77.

RD (11) 31 Mar 1978

PG (12) 48 Pages

RS (14) FAA-ACS-82-7
RC (20) Unclassified report
NO (21) Report to the Congress.
DE (23) *Commercial aviation
Security, Operational effectiveness, Aircraft hijacking, Prevention, Reports, Civil aviation, Commercial aircraft, Passenger aircraft, Passengers, Bombs, Airports, Sabotage, Aviation safety, Crimes, International law
ID (25) Bomb threats
AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A200 844/XAG
FG (2) 140200
130500
131100
010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE

TI (6) Standard Fire Test Apparatus and Procedure (for Flexible Hose Assemblies). Revision.

DN (9) Power plant engineering rept. no. 3A

AU (10) Burke, E. P.

RD (11) Mar 1978

PG (12) 34 Pages

RC (20) Unclassified report

DE (23) *FIRE RESISTANCE, *HOSE COUPLINGS, *HOSES
ENGINES, FIRES, FLEXIBLE MATERIALS, AIRCRAFT ENGINES, FLIGHT, FLUID FLOW, HOSE FITTINGS, OPERATION, ROUGHNESS, SIMULATION, TEST EQUIPMENT,
TEST FIXTURES, TEST METHODS, VIBRATION

AB (27) This document describes a method of test intended to determine the fire resistance of flexible hose assemblies under simulated conditions. The test is aimed at producing a typical aircraft powerplant fire, vibration of the type encountered during rough engine operation, and the various flight conditions of fluid flow, pressure, and temperature. Keywords: Test methods; Test fixtures; Hose fittings, Hose couplings. (KT)

AN (1) AD-A051 690/XAG

FG (2) 060500
061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE

TI (6) Development of the Aviation Stress Protocol--Simulation and Performance, Physiological, and Biochemical Monitoring Systems: Phase I. Assessment of Cardiovascular Function after Exposure to the Aviation Stress Protocol-Simulation. The Relationship between Stress-Related Metabolites and Disqualifying Pathology in Air Traffic Control Personnel

AU (10) Higgins, E. A.
Lategola, M. T.
Melton, C. E.

RD (11) Feb 1978

PG (12) 36 Pages

RS (14) FAA-AM-78-5

RC (20) Unclassified report

NO (21) Three reports Relevant to Stress in Aviation Personnel.

DE (23) *Aviation medicine, *Pilots, *Air traffic controllers,
*Stress(Physiology)
Monitoring, Cardiovascular system, Biochemistry, Altitude chambers, Flight simulation

ID (25) Aviation stress protocol simulation

AB (27) In development of the aviation stress protocol--simulation (ASPS), the following conclusions were reached: (1) In experiments using the ASPS, cardiovascular testing will be conducted in parallel, but separately; (2) The time of exposure to altitude will be limited to 2 h; and (3) Measurements such as visual accommodation, internal body temperature, blood glucose, blood drug or alcohol level, and others will be included in the ASPS only when appropriate. Cardiovascular and pulmonary parameters were assessed under simulated +Gz and exercise conditions in normal males after exposure to the ASPS. Some parameters were displaced to a statistically significant degree, but such displacements are of doubtful physiological significance because of the unavoidable time lapse between altitude exposure and assessment. These preliminary experiments served to demonstrate that meaningful physiological assessments can only be made during exposure to the altitudes specified in the ASPS. Thirty-six controller subjects from previous stress studies were identified who subsequently suffered medical conditions severe enough to require waiver or retirement. These subjects' stress indices were compared with those of subjects who had no known pathology

to see if any of the stress indicators were predictive of pathological conditions. The data showed that controllers who developed gastrointestinal pathology had significantly ($p < 0.01$) higher c(st) than did their normal counterparts. At Miami ARTCC, c(ne) was significantly elevated ($p < 0.05$) in the cardiovascular group. (Author)

AN (1) AD-A051 691/XAG

FG (2) 010301

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Evaluation of Seating and Restraint Systems and Anthropomorphic Dummies Conducted during Fiscal Year 1976

AU (10) Chandler, Richard F.

Trout, Edwin M.

RD (11) Feb 1978

PG (12) 44 Pages

RS (14) FAA-AM-78-6

RC (20) Unclassified report

DE (23) *Anthropometry, *Aircraft seats

Restraint, Energy absorbers, Crash injuries, Protection, Aviation safety, Prototypes, Test methods, Photographic analysis, Impact, Impulse loading, Helicopters

AB (27) The results of test programs conducted by the Protection and Survival Laboratory to investigate the performance of prototype or operational seating and restraint systems relative to their ability to provide protection against crash injury and to investigate the performance of anthropomorphic dummies in the dynamic environment are reported. The data in this report were previously presented in a memorandum report and are subject to additional evaluation or change upon review, conduct of additional testing, or receipt of additional facts. (Author)

AN (1) AD-A053 204/XAG

FG (2) 060700

061300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Radiobiological Aspects of High Altitude Flight: Relative Biological Effectiveness of Fast Neutrons in Suppressing Immune Capacity to an Infective Agent

AU (10) Friedberg, Wallace

Neas, Barbara R.

Faulkner, Donald N.

Hanneman, Gerald D.

Darden, E. B., Jr

RD (11) Feb 1978

PG (12) 8 Pages

RS (14) FAA-AM-78-8

RC (20) Unclassified report

DE (23) *Radiobiology, *Immunity, *Neutron irradiation, *Immunosuppression Mice, High altitude

ID (25) LPN-FAA-AM-B-69-PHB-4, LPN-FAA-AM-B-70-PHB-4, Radiation effects(Biology), Cestodes, Relative biological effectiveness, Hymenolepis Nana

AB (27) We investigated the relative biological effectiveness (RBE) of fast neutrons compared with X-rays in impeding development of immunity to an infective agent, the intestinal cestode Hymenolepis nana. Mice were irradiated with neutrons or X-rays and 2 days later given an immunizing dose of H. nana eggs. After another 2 days, the mice received a challenge dose of the eggs. Challenge egg doses were also given to sham-irradiated unimmunized and immunized controls. All mice were killed 90 to 92 hours after challenge, and the H. nana larvae (cysticercoids) that developed in the intestinal tissue were counted. An increased cysticercoid count in the irradiated mice, as compared with the count in unirradiated immunized controls, reflects suppression of immune capacity by the radiation. The results indicate a neutron RBE of 4 at 50 and 101 rad. (Author)

AN (1) AD-A053 675/XAG

FG (2) 050600

050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Use of the Occupational Knowledge Test to Assign Extra Credit in Selection of Air Traffic Controllers

AU (10) Lewis, Mary A.

RD (11) Feb 1978

PG (12) 13 Pages

RS (14) FAA-AM-78-7

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Personnel selection

Skills, Achievement tests, Job training, Jobs, Personnel management,

Validation, Aptitude tests, Performance(Human)

AB (27) The Occupational Knowledge Test (OKT) 101-B was administered to 784 air traffic control trainees who entered the FAA Academy's 16-week training course in 1976. All trainees completed the nonradar laboratory portion of the training and in addition completed a preemployment questionnaire. Based on responses to the questionnaire, the trainees were assigned to one of three experience groups corresponding to groups given credit for experience using Civil Service Commission (CSC) selection procedures. It was found that the OKT was highly correlated with experience ($r = .64$) and in addition the OKT had a higher correlation with successful completion of the nonradar lab than did experience ($r = .25$ vs. $.12$). It was determined that use of an OKT score of 75 or above to assign extra credit would result in a failure rate of 3.1 percent for those receiving credit, while use of the current experience scale would result in a failure rate of 7.6 percent for those receiving extra credit on the CSC selection battery. The results held up a cross-validation sample of 432 trainees who entered the Academy during 1977. Based on the results, it is recommended that an OKT score of 75 or above be used to assign extra credit for experience in the selection of air traffic controllers. (Author)

AN (1) AD-A059 560/XAG

FG (2) 010300

060700

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF ENVIRONMENTAL

QUALITY

TI (6) Radiological Hazards to Air Commerce

AU (10) Smith, William S., Jr

RD (11) Feb 1978

PG (12) 44 Pages

RS (14) FAA-AEQ-78-04, FAA/AEQ-10

RC (20) Unclassified report

DE (23) *Passengers, *Air transportation, *Radiation hazards, *Literature surveys

Ionizing radiation, Cosmic rays, Solar flares, Health, Public safety, Nuclear explosion testing, Debris

AB (27) A survey of existing literature concerning radiological hazards to air commerce has been completed. A preliminary assessment of three major sources of potentially significant ionizing radiation has indicated that although some data are lacking, no actual danger to either passengers or crew has been documented. Cosmic radiation from galactic sources represents a relatively well understood and easily predictable

phenomenon. Solar flare activity and nuclear testing episodes, however, are infrequent events which require an ongoing effort to maintain a current understanding of health and safety related issues. (Author)

AN (1) AD-A050 922/XAG

FG (2) 060400

061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Effects of Ethanol on Visual Unit Activity in the Thalamus

AU (10) Revzin, A. M.

RD (11) Jan 1978

PG (12) 12 Pages

RS (14) FAA-AM-78-2

RC (20) Unclassified report

DE (23) *Visual perception, *Ethanol, *Thalamus

Nerve cells, Response(Biology), Dose rate, Inhibition, Excitation, Thresholds(Physiology), Toxicity, Pigeons, Behavior, Peripheral vision, Safety, Drivers(Personnel), Pilots, Performance(Human), Alcohol consumption

ID (25) Individual differences

AB (27) The investigator studied the effects of ethanol on the spontaneous activity of single neurons in functionally differentiated subnuclei of a posterior thalamic visual projection area, nucleus rotundus, in the anesthetized pigeon. Low doses of ethanol, 0.05 - 0.10 ml/kg (producing blood levels of about 0.005 - 0.010%), inhibited activity in anterior rotundus but had complex excitatory-inhibitory effects on posterior rotundal cells. Nonvisual dorsal thalamic cells, and 'lateral geniculate' neurons were inhibited by ethanol but threshold doses (0.25 - 0.40 ml/kg) were far higher than those for the rotundal cells (0.05 ml/kg). These differing dose-response curves for visual and nonvisual thalamic neurons suggest: (1) low doses of ethanol may seriously impair peripheral visual functions; (2) The behavioral effects of ethanol are highly dose-dependent; (3) Effects of low doses of ethanol may not be extrapolated from high-dose effects since high-dose effects may 'mask' effects dominant at low doses; (4) The effects of a given dose of ethanol may vary widely and unpredictably among individuals. Thus, the notorious unpredictability of ethanol-induced changes in behavior or task performance may be the inevitable consequence of the reported differential dose-response effects on single neurons.

AN (1) AD-A051 002/XAG
FG (2) 131200
230500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Aircrew and Passenger Protective Breathing Equipment Studies
AU (10) DESteiguer,D.
Pinski,M. S.
Bannister,J. R.
McFadden,E. B.
RD (11) Jan 1978
PG (12) 46 Pages
RS (14) FAA-AM-78-4
RC (20) Unclassified report
DE (23) *Breathing apparatus, *Aircraft equipment
Flight crews, Passengers, Aircraft fires, Breathing masks, Oxygen equipment, Performance(Engineering), Tracer studies, Reports
AB (27) This document represents a collection of various reports concerning the protective capability of passenger and crew oxygen breathing equipment and specialized devices and concepts against smoke and toxic gases produced by aircraft fires. (Author)

AN (1) AD-A051 485/XAG
FG (2) 230200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Passenger Flow Rates between Compartments: Straight-Segmented Stairways, Spiral Stairways, and Passageways with Restricted Vision and Changes of Attitude
AU (10) Pollard,D. W.
Garner,J. D.
Blethrow,J. G.
Lowrey,D. L.
RD (11) Jan 1978
PG (12) 53 Pages
RS (14) FAA-AM-78-3
RC (20) Unclassified report
DE (23) *Passenger aircraft, *Evacuation
Flow rate, Passengers, Aviation accidents, Attitude(Inclination), Aviation safety, Human factors engineering, Visibility, Compartments, Flight simulators

ID (25) *Stairways, *Passageways, LPN-FAA-AM-B-75/76-PRS-38
AB (27) Data are presented from 210 trials to compare movement up and down spiral and straight-segmented stairways simulating the stairs in multideck transport aircraft, up and down spiral and straight-segmented industrial-type stairways, fore and aft through a passageway enclosed on one side, and fore and aft through a passageway enclosed on both sides. The Civil Aeromedical Institute evacuation simulator was positioned to represent degrees of pitch and roll similar to those encountered in accidents as a result of landing gear failure. Tests were conducted in regular cabin lighting, reduced cabin lighting, reduced cabin lighting with subjects wearing goggles simulating smoke conditions, and artificial smoke conditions. Results indicate that an enclosed passageway enables more rapid movement from one compartment to another than does a passageway enclosed on only one side. Straight-segmented stairways allowed more efficient movement from one level to another than did spiral stairs. Subjects were more cautious in the tests that involved wearing smoke goggles than in any of the other conditions. (Author)

AN (1) AD-A051 621/XAG
FG (2) 010500
170703
170900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) Project Plan: Tower Automated Ground Surveillance System Development Program
AU (10) Perie,M. E.
RD (11) Jan 1978
PG (12) 18 Pages
RS (14) FAA-RD-78-4
RC (20) Unclassified report
DE (23) *Airport control towers, *Surveillance, *Airport radar systems, *Air traffic control systems
Automation, Air traffic controllers, Ground level
ID (25) TAGS(Tower Automated Ground Surveillance System)
AB (27) The Tower Automated Ground Surveillance System (TAGS) represents an important step in providing automation support for air traffic controllers in the tower cab. During FY-1978 the objective of the TAGS activity is to perform the necessary analyses and feasibility tests to define the TAGS development program. This mini-plan describes the FY-1978 activity. (Author)

AN (1) AD-A051 869/XAG
FG (2) 230600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Flotation and Survival Equipment Studies

AU (10) McFadden,E. B.

RD (11) Jan 1978

PG (12) 75 Pages

RS (14) FAA-AM-78-1

RC (20) Unclassified report

DE (23) *Survival equipment, *Sea rescue equipment, *Aircraft

Ditching, Buoyancy, Life preservers, Life jackets, Floats, Floating bodies, Cushioning, Aircraft seats, Life rafts, Wet suits, Infants, Safety, Sharks, Protection

ID (25) Flotation, LPN-FAA-AM-B-77-PRS-15

AB (27) This report is a collection of various studies, conducted over 15 years, of flotation and survival equipment used or proposed for aviation application, including developmental and prototype designs. Results of these studies were presented at scientific meetings and/or published in preprints or proceedings with limited distribution. Information obtained from several of the included studies is being used in the development of revised flotation equipment standards. (Author)

AN (1) AD-A052 001/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Master Plan: Flight Service Station Automation Program.

RD (11) Jan 1978

PG (12) 83 Pages

RS (14) FAA/RD-FSS-01A

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Automation

Facilities, Site selection, Navigational aids, Communication terminals, Weather stations, Manpower utilization, Cost effectiveness, Maintenance, Planning, Long range(Time), Cost estimates

ID (25) Flight service stations

AB (27) The Master Plan for the Flight Service Automation Program is a planning document for the implementation of the Flight Service Information

System and serves as the acquisition authorization document. This document contains background and introductory information relating to the present system of 292 manned domestic Flight Service Stations, program objectives, requirements, planning guidelines, systems and system interface descriptions, scheduling and implementation information, relationships with other major programs, management method, logistics, staffing, training, security, and financial planning information. (Author)

AN (1) AD-A052 362/XAG

FG (2) 010500

170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Airport Surface Detection Equipment (ASDE-3) Project Plan.

DN (9) Rept. for FY 1978-1979

AU (10) Perie,M. E.

RD (11) Jan 1978

PG (12) 49 Pages

RS (14) FAA/RD-78/12

RC (20) Unclassified report

DE (23) *Airport radar systems, *Air traffic control systems

Display systems, Surfaces, Airports, Models, Detection

ID (25) Airport surface traffic control, ASDE(Airport Surface Detection Equipment)

AB (27) The Airport Surface Detection Equipment (ASDE) is a primary radar and display system used to provide the airport surface traffic situation to the air traffic controller. An ASDE-3 engineering model is being procured by the Transportation Systems Center (TSC) for testing at NAFEC. The product of this development will be a complete and comprehensive technical data package presented to the Airways Facilities Service (AAF) for procurement of production ASDE-3 units. The purpose of this Project Plan is to describe the program for development, test, evaluation, maintenance, and configuration control of the ASDE-3 engineering model, and to delineate the responsibilities of each of the participating organizations. (Author)

AN (1) AD-A053 265/XAG

FG (2) 120100

201400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) A Comparison of Measured Data and ITS Model Predictions.

DN (9) Final rept.

AU (10) Smith,Robert D.

RD (11) Jan 1978

PG (12) 284 Pages

RS (14) FAA-RD-77-106

RC (20) Unclassified report

DE (23) *TACAN, *Radio navigation

Very high frequency, Models, Field intensity, Mathematical prediction, Electromagnetic wave propagation, Comparison, Electrical measurement

ID (25) VOR navigation systems

AB (27) The Institute of Telecommunication Sciences (ITS) has developed for the Federal Aviation Administration (FAA), a computer model (IF-77) which predicts signal strengths, desired-to-undesired signal ratios, and a variety of other radio propagation related outputs. The model is periodically updated as ITS improves its prediction capability. The model was last validated by FAA about 10 years ago. Since a number of changes have been made to the model since then, revalidation is not inappropriate. In this Report, propagation predictions are compared with VOR and TACAN signal strength measurements taken on 20 VORTAC's in the Southwest Region of the United States. This comparison confirms once again, that the ITS/FAA model accurately predicts VOR and TACAN signal strength. (Author)

AN (1) AD-A069 023/XAG

FG (2) 010600

050200

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC ASSOCIATE ADMINISTRATOR FOR AIRPORTS

TI (6) Operations Under the Airport and Airway Development Act of 1970 as Amended by the Airport and Airway Development Act Amendments of 1976.

DN (9) Rept. no. 9 (Annual) for period ending 30 Sep 78

AU (10) Martin, Virginia J.

RD (11) 1978

PG (12) 155 Pages

RS (14) FAA-ARP-79-1

RC (20) Unclassified report

DE (23) *Air transportation, *Federal law, *Reports

Airports, Grants, Commercial aviation, Aviation safety, Construction, Runways, Environmental protection, Costs

ID (25) Airport and Airway Development Act of 1970

AB (27) Section 24 of the Airport and Airway Development Act of 1970 (P.L. 91-258) requires that the Secretary, Department of Transportation, submit an annual report to Congress of operations under Part II of the Act for the preceding fiscal year. This report covers operations for the fiscal year ending September 30, 1978. (Author)

AN (1) AD-A079 394/XAG

FG (2) 170703

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Current Aviation Statistics: Air Traffic Activity Enroute IFR Air Traffic Survey, Peak Day - Fiscal Year 1978.

RD (11) 1978

PG (12) 56 Pages

RS (14) FAA-AMS-220-79-3

RC (20) Unclassified report

DE (23) *AIR TRAFFIC

INSTRUMENT FLIGHT, AIR CONTROL CENTERS, GEOGRAPHIC DISTRIBUTION, ALTITUDE, TAKEOFF, TIME, DAILY OCCURRENCE, STATISTICAL DATA, TABLES(DATA)

ID (25) Departures

AB (27) Air Traffic facilities record daily aircraft operations under low altitude air route control. From these daily records, a facility is able to select the peak day of IFR aircraft departures. Reported are data on aircraft type, air speed, altitude origin and destination, departure time and date of peak day. Selections from these data are presented in tables on departures by ARTCC. Details of altitudes assigned are shown by both aircraft and engine groupings and also by type of user. Departure times are presented by center, by class of user and aircraft type. (Author)

AN (1) AD-A049 049/XAG

FG (2) 050800

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) Development of New Selection Tests for Air Traffic Controllers

AU (10) Dailey, John T.
Pickrel, Evan W.

RD (11) Dec 1977

PG (12) 12 Pages

RS (14) FAA-AM-77-25

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Personnel selection, *Aptitude tests
Test construction(Psychology), Air traffic, Aviation safety, Threat
evaluation, Perception(Psychology), Pattern recognition

AB (27) This report describes the development of a new Multiplex Controller Aptitude Test for initial screening of FAA Air Traffic Controller applicants. Its content includes the traditional types of aptitude test items used for today's screening. In addition it includes measurement of the ability to identify potential conflicts in air traffic, a skill that has been demonstrated experimentally to have a significant relation to success in the ATC speciality. Alternate forms of the test have been developed in a format that meets Civil Service test administration requirements. The test has been administered experimentally to groups whose abilities approximate those of the applicant population, and results indicate that it has satisfactory reliability characteristics. It has been administered experimentally to incoming students at the FAA ATC Academy and personnel on the job at operational facilities, and constantly produced higher correlations with ATC success than any other test used in the validation studies. The available data indicate that this new and customized instrument promises to be a significant improvement over the existing battery for screening FAA Air Traffic Controller applicants. (Author)

AN (1) AD-A051 129/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF ENVIRONMENTAL QUALITY

TI (6) High Altitude Pollution Program A Status Report Prepared in Accordance with PL 95-95

AU (10) Sundararaman, N.

RD (11) Dec 1977

PG (12) 36 Pages

RS (14) FAA-AEQ-77-16

RC (20) Unclassified report

DE (23) *Pollution, *High altitude, *Stratosphere

Ozone layer, Nitrogen oxides, Aircraft exhaust, Chemical reactions,

Atmospheric motion, Chemistry, Chemical analysis

AB (27) The past and planned activities of the High Altitude Pollution Program (HAPP) are summarized. A preliminary HAPP assessment of the stratospheric effects from aviation indicates that there is no imminent threat of ozone reduction from any type of existing aircraft, though substantial uncertainties still remain to be unravelled. (Author) '

AN (1) AD-A051 143/XAG

**FG (2) 010300
010500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Wake Vortex.

RD (11) Dec 1977

PG (12) 67 Pages

RS (14) FAA-ED-21-1A

RC (20) Unclassified report

NO (21) Supersedes Rept. No. FAA-ED-21-1 dated Feb 73, AD-760 636.

DE (23) *Trailing vortices, *Aircraft, *Optical detection

Takeoff, Attenuation, Safety, Wake, Laser beams, Air traffic control systems, Meteorological data, Commercial aviation, Cost effectiveness

AB (27) This Engineering and Development Program Plan defines the current research efforts investigating the wake vortex phenomenon. The overall objectives of the program are the design, development, testing, and prototyping of a system(s) to increase runway capacity by minimizing wake vortex effects as an impediment to efficient and effective traffic management in the terminal environment. The plan identifies and discusses the three major work areas: Vortex Advisory System, Wake Vortex Avoidance System, and Vortex Alleviation Research. Prior developments and related research are reviewed and future research requirements identified. (Author)

AN (1) AD-A052 363/XAG

**FG (2) 010500
170703
250200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Discrete Address Beacon System (DABS) Development Test and Evaluation (DT and E) Program.

DN (9) Final rept.
AU (10) Wojciech, John J.
RD (11) Dec 1977
PG (12) 31 Pages
RS (14) FAA/RD-77/185
RC (20) Unclassified report
DE (23) *Radio beacons, *Air traffic control systems
 Test and evaluation, Data links, Performance(Engineering)
ID (25) DABS(Discrete Address Beacon System), LPN-FAA-034-241
AB (27) The program to accomplish the Development Test and Evaluation (DT and E) of the Discrete Address Beacon System (DABS) is defined. The goals of the DABS (DT and E) Program are to establish the DABS performance characteristics, determine the compatibility of DABS with the Air Traffic Control (ATC) system, and demonstrate the ATC performance improvements made possible by DABS. In addition, an evaluation of the Automatic Traffic Advisory and Resolution Service (ATARS) and the use of the DABS data link to exchange pilot-ATC information will be performed. The evaluations of the DABS test results will be used to prepare technical data packages for DABS procurement by the Operating Services. The DABS (DT and E) Program consists of four phases: factory acceptance tests, field acceptance tests, performance tests, and DABS/ATC systems tests. General information is provided on the test requirements associated with each program phase, documentation requirements, organizational responsibilities, and schedules. (Author)

AN (1) AD-A053 110/XAG
FG (2) 010500
230600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AIRPORTS
PROGRAMS

TI (6) A Review of Certificated Airport Crash Fire Rescue Service Criteria.
DN (9) Final rept.
AU (10) Ruggles, Bertrand F.
RD (11) Dec 1977
PG (12) 26 Pages
RS (14) FAA-AAP-78-1
RC (20) Unclassified report
DE (23) *Airports, *Rescue equipment, *Firefighting vehicles
 Crash landing, Standards, Aviation safety, Cost analysis, High costs
AB (27) This study reviews the minimum level of crash fire suppression service required by Federal Aviation Regulation (FAR) Part 139 and compares the required minimum with the recommended level for Index A, AA and B

airports. It outlines the economic impact of the present airport index threshold criteria. It presents a discussion of the expected hazard, the population base, and the operational base as factors affecting the level of crash, fire and rescue (CFR) services required at airports and as factors affecting the airport's ability to support that level of CFR service. Conclusions are presented relative to the feasibility of fulfilling the following objectives: (1) Enhance the overall safety of airport operations at all Index A and AA airports without incurring increased operation and maintenance costs; (2) Minimize the increase in the operation and maintenance costs of CFR services presently being experienced by airport owners/operators when transitioning from Index AA to Index B certification; and (3) Reduce the operations and maintenance costs of CFR services currently being provided at small Index B airports while maintaining or enhancing the present level of safety. (Author)

AN (1) AD-A060 439/XAG
FG (2) 010309
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS
TI (6) Airport Activity Statistics of Certificated Route Air Carriers.
DN (9) Semi-Annual rept.
RD (11) 31 Dec 1977
PG (12) 312 Pages
RC (20) Unclassified report
DE (23) *PASSENGER AIRCRAFT, *AIR LOGISTICS SUPPORT, *AIRCRAFT CARRIERS
 TABLES(DATA), STATISTICAL DATA, AIRPORTS, AIR TRAFFIC, TAKEOFF, CARGO,
 SCHEDULING, PILOTS
ID (25) Mail
AB (27) This report furnishes airport activity of the Certificated Route Air Carriers. Included in the data contained in Table 6 are passenger enplanements, tons of enplaned freight, express, and mail. Both scheduled and non-scheduled service, and domestic and international operations are included. These data are shown by airport and carrier. Table 7 includes departures by airport, carrier and type of operation, and type of aircraft. (Author)

AN (1) AD-A067 285/XAG
FG (2) 010300

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Census of U.S. Civil Aircraft Calendar Year 1977.

DN (9) Annual rept.

AU (10) Moles, Charles
Wimbush, Violet

RD (11) 31 Dec 1977

PG (12) 347 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Census, *Aircraft

Statistical data, United States, Tables(Data), Production, Airports,
Pilots, Instructors, Flight

AB (27) This report covers statistical data, including General Aviation, Air
Carrier, Aeronautical Production, Airports, detailed computer printouts
for aircraft, and a Glossary of the terms used in this publication.
(Author)

AN (1) AD-A067 294/XAG

**FG (2) 010300
010500**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) FAA Statistical Handbook of Aviation. Calendar Year 1977.

DN (9) Annual rept.

AU (10) Moles, Charles
Wimbush, Violet

RD (11) 31 Dec 1977

PG (12) 172 Pages

RC (20) Unclassified report

AL (22) Availability: Superintendent of Documents, GPO, Washington, DC 20402.
HC \$3.75. Microfiche furnished to DDC (and NTIS) users.

DE (23) *Civil aviation, *Aircraft, *Airports, *Handbooks

Aviation accidents, Statistical data, Air traffic, United states,
Pilots, Death, Rates, Tables(Data)

AB (27) This report covers statistical data, including the Federal Aviation
Administration, the National Airspace System, Airports, Airport
Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier
Operating Data, Airmen, U.S. Registered Aircraft, Aeronautical
Production and Exports, Aircraft Accidents, and a Glossary of the terms
used in this publication. (Author)

24

AN (1) AD-A049 305/XAG

**FG (2) 010500
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
POLICY**

**TI (6) IFR Aircraft Handled Forecast By Air Route Traffic Control Center,
Fiscal Years 1978-1989**

AU (10) Hannan, Bernard

RD (11) Nov 1977

PG (12) 48 Pages

RS (14) FAA-AVP-77-34

RC (20) Unclassified report

DE (23) *Air traffic control terminal areas, *Instrument flight

Air traffic control system analysis, Forecasting, Air traffic,
Planning, Geographical distribution, Tables(Data), Federal budgets,
Requirements, Air transportation, Civil aviation, Commercial aviation,
Military aircraft, Resource management

AB (27) The report presents the forecasts of Instrument Flight Rule (IFR)
aircraft handled by FAA air route traffic control centers (ARTCC). It
serves as a base for the FAA planning and budget process in determining
future requirements for facilities, equipment and manpower. The
forecasts show that total aircraft handled will increase from 25.7
million in FY 1977 to 41.5 million in FY 1989. These national total
numbers along with those for the intervening years are broken down by
FAA region and by each air route traffic control center in this report.
(Author)

AN (1) AD-A052 349/XAG

**FG (2) 010500
130200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
POLICY**

TI (6) Metropolitan Washington Airport Policy Analysis.

DN (9) Final rept.

AU (10) Fromme, William R.

RD (11) Nov 1977

PG (12) 89 Pages

RS (14) FAA-AVP-77-36

RC (20) Unclassified report

DE (23) *Management planning and control, *Airports
Air traffic, Passengers, International airports, Aircraft noise, Urban
planning, Policies, District of Columbia
ID (25) Washington National Airport, Dulles International Airport
AB (27) This report presents results of an analysis of the Metropolitan
Washington Airports undertaken by the Federal Aviation Administration
(FAA) to establish the appropriate role of Washington National and
Dulles International Airports within the Metropolitan Washington area.
The report is intended to guide future development and operation of
these facilities. A wide range of policy options defining various roles
for the Metropolitan Airports are tested and evaluated. Quotas,
curfews, and the possible wide-body aircraft service at National
Airport are examined for potential policy impacts on regional air
travelers, community residents, and airport investment requirements.
(Author)

AN (1) AD-A082 938/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT
STANDARDS SERVICE
TI (6) Report of the Aircraft Systems/Flight Test Workshop Held at East Point,
Georgia on 8-17 November 1977.
RD (11) Nov 1977
PG (12) 185 Pages
RS (14) FAA-AFS-130-78-1
RC (20) Unclassified report
DE (23) *Aircraft, *Flight testing, *Workshops
Navigation, Communication and radio systems, Smoke, Ice, Aircraft
equipment, Aircraft maintenance, Systems engineering, Ventilation,
Handbooks, Training, Flight control systems, Integrated systems
ID (25) Omega navigation system

AN (1) AD-A044 597/XAG
FG (2) 010500
010600
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE
TI (6) SRDS Technical Program Document, Fiscal Year 1978 Engineering and
Development Approved Programs.
RD (11) 01 Oct 1977

PG (12) 133 Pages
RC (20) Unclassified report
DE (23) *Civil aviation
Aeronautical engineering, Technology, Scientific research, Air traffic
control systems, Navigation, Airports, Noise reduction, Communication
and radio systems, Aircraft landings, Aviation safety
AB (27) This document contains research and technology resumes which reflect
systems research and development service approved subprograms. These
resumes identify the technical objective, approach, milestones
scheduled for accomplishment, accomplishments, requirements, etc. The
resumes are arranged according to the following engineering and
development programs: Radar, Beacon, Navigation, Airborne Separation
assurance, Communications, Approach and Landing Systems,
Airport/Airside, ATC Systems Command Center Automation, Enroute
control, Flight Service Stations, Terminal/Tower Control, Weather,
Satellites, Aircraft Safety, Environment and Support.

AN (1) AD-A047 717/XAG
FG (2) 060400
061500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE
TI (6) Functional Localization in the Nucleus Rotundus
AU (10) Revzin, Alvin M.
RD (11) Oct 1977
PG (12) 14 Pages
RS (14) FAA-AM-77-22
RC (20) Unclassified report
DE (23) *Nerve cells, *Nuclei(Biology), *Brain
Retina, Images, Sizes(Dimensions), Velocity, Selection, Patterns,
Models
ID (25) *Nucleus rotundus, LPN-FAA-AM-A-76-TOX-30, LPN-FAA-AM-A-77-TOX-30
AB (27) Work has suggested that the effects of psychoactive drugs on visual
performance may best be understood, and/or predicted, by studying
differential effects of the drugs on functionally differentiated sets
of neurones in visual projection systems in the brain. This study
demonstrates that the nucleus rotundus, an avian posterior thalamic
visual relay nucleus homologous to parts of the mammalian lateralis
posterior/pulvinar complex, is divided into at least three functionally
distinct neurone subsets. The 'posterior' rotundal cells respond to
any moving retinal image. Ventral rotundal cells respond preferentially
to intensity modulation of moving or stationary stimuli. Anterior

rotundal neurones respond preferentially to such abstract properties of moving stimuli as size, velocity, and direction of movement. All subnuclei may be further subdivided by function. The findings reinforce current theories which suggest that pattern vision results from cortical integration of the outputs of many classes of pattern selective visual projection system neurones. Preliminary findings are also presented suggesting that effects of psychoactive drugs, such as ethanol, can indeed be predicted or understood by studies on differential effects on neurones in this model system.

- AN (1) AD-A110 350/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION SECURITY
TI (6) Effectiveness of the Civil Aviation Security Program.
DN (9) Semiannual rept. no. 6, 1 Jan-30 Jun 77.
RD (11) 31 Oct 1977
PG (12) 45 Pages
RS (14) FAA-ACS-82-6
RC (20) Unclassified report
NO (21) Report to Congress.
DE (23) *Security, *Civil aviation
Aviation safety, Commercial aviation, Threats, Sabotage, Aircraft hijacking, Bombs, Explosives, Weapons, Detectors, Passengers, Terrorism, Prevention
AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

- AN (1) AD-A046 826/XAG
FG (2) 050800
061000
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE
TI (6) Stress in Air Traffic Personnel: Low-Density Towers and Flight Service Stations
AU (10) Melton,C. E.

- Smith,R. C.
McKenzie,J. M.
Wicks,S. M.
Saldivar,J. T.
RD (11) Sep 1977
PG (12) 19 Pages
RS (14) FAA-AM-77-23
RC (20) Unclassified report
DE (23) *Stress(Psychology), *Anxiety, *Air traffic controllers, *Stress(Physiology)
Heart rate, Urine, Biochemistry, Steroids, Epinephrine, Levarterenol, Measurement, Metabolites, Excretion, Indexes
ID (25) LPN-AM-C-77-PHY-83
AB (27) Stress and anxiety levels were measured in 10 air traffic control specialists (ATCS) at two low-traffic-density towers, Fayetteville (FYV), Arkansas, and Roswell (ROW), New Mexico, and in 24 flight service (FS) specialists at Oklahoma City (OKC), Oklahoma, Fayetteville, Arkansas, and Roswell, New Mexico. Physiological measurements consisted of heart rate and urine biochemical analysis for 17-ketogenic steroids, epinephrine, and norepinephrine. On-duty arousal in ATCS's and FS specialists was evident both physiologically and psychologically; such arousal was within psychologically normal limits and was generally low physiologically compared to other air traffic control (ATC) facilities that have been studied in the past. Physiological stress levels at these low-density towers and flight service stations were also low compared to other ATC facilities that were studied previously. It is concluded that it is inappropriate to describe all air traffic control work, as is commonly done in the popular press, as unusually stressful. Such accounts in the popular press tend to deal with the exceptional rather than with the typical controller or facility. (Author)
- AN (1) AD-A047 657/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION POLICY
TI (6) FAA Aviation Forecasts. Fiscal Years 1978-1989.
RD (11) Sep 1977
PG (12) 85 Pages
RS (14) FAA-AVP-77-32
RC (20) Unclassified report
DE (23) *Airports, *Air traffic, *Air transportation, *Forecasting

Commercial aviation, Civil aviation, Mathematical models, Economic models, Mathematical prediction, decision making, Trends, Econometrics, Tables(Data), Regression analysis, Dynamic programming, Terminal flight facilities

AB (27) This report contains the fiscal years 1978 to 1989 Federal Aviation Administration (FAA) forecasts of aviation activity and measures of workload at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi, general aviation and the military. This report also contains for the first time a specific forecast for commuter airlines. The forecasts have been prepared to meet the budget and manpower planning needs of the constituent units of FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public. The overall outlook throughout the forecast period is for moderate economic growth, declining unemployment, and decreasing inflation. Based on these assumptions, aviation activity is forecast to increase by Fiscal Year 1982 by 29 percent at towered airports, 32 percent at air route traffic control centers and 49 percent in flight services performed. The corresponding percentage increases for Fiscal Year 1989 are 49, 64 and 104, respectively. General aviation and air taxis (including commuters) will account for most of the growth in activity at FAA facilities. (Author)

AN (1) AD-A047 718/XAG

FG (2) 050600
061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Disorientation Training in FAA-Certificated Flight and Ground Schools:
A Survey

AU (10) Collins,William E.
Hasbrook,A. Howard
Lennon,Amelia O.
Gay,Dorothy J.

RD (11) Sep 1977

PG (12) 15 Pages

RS (14) FAA-AM-77-24

RC (20) Unclassified report

DE (23) *Flight training, *Orientation(Direction)

Pilots, Vertigo, Aviation accidents, Instrument flight, Questionnaires,

Training films, Instructors, Proficiency, Lectures, Systems analysis, Surveys

ID (25) *Disorientation, LPN-FAA-AM-D-75-PSY-33, LPN-FAA-AM-D-74-PSY-33

AB (27) A 10-item, voluntary questionnaire answered by 674 flight and ground schools provided information on (1) the conduct of formal instruction about disorientation, (2) the occurrence and content of lectures on disorientation, (3) use of on-the-ground demonstrations of disorientation, (4) use of in-the-air demonstrations of disorientation, (5) use of films on pilot vertigo, (6) amount of instrument flying training students receive, (7) amount of instrument flying training required of flight instructors to maintain their proficiency, (8) adequacy of the school's program on disorientation training, (9) other comments, and (10) numerical data regarding the number of students beginning and completing various flight and/or ground school courses. More than one-third of the respondents evaluated their disorientation training program as inadequate and defined the inadequacy most often as a lack of appropriate materials, aids, and information. Tabulations of responses to the separate items suggested areas for improvement in disorientation training. Recommendations were made. (Author)

AN (1) AD-A052 403/XAG

FG (2) 010500
010600
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Air Traffic Activity, Fiscal Year 1977

AU (10) Wilson,Patricia

RD (11) 30 Sep 1977

PG (12) 237 Pages

RC (20) Unclassified report

NO (21) See also report dated 30 Jun 76, AD-A032 260.

DE (23) *Air traffic, *Air traffic control terminal areas, *Airports
Aircraft landings, Takeoff, Commercial aviation, Military aircraft, Overflight, Flight paths, Glide slope, Instrument flight, Instrument landings, Airport control towers, Routing

AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), Combined Station Towers (CS/Ts), International Flight Service

Stations (IFSSs), and Approach Control Facilities. (Author)

AN (1) AD-A088 157/XAG

FG (2) 010500
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Description of the Multiple Airport Demand Allocation Model

AU (10) Campbell,B.

Fromme,William R.

RD (11) Sep 1977

PG (12) 52 Pages

RS (14) FAA-AVP-77-39

RC (20) Unclassified report

NO (21) Technical Supplement to Rept. no. FAA-AVP-77-36, AD-A052 349.

DE (23) *Airports, *Air traffic, *Allocations

Scheduling, Access, Passengers, Mathematical prediction, Mathematical models, District of Columbia, Maryland, Virginia, Management, Policies

ID (25) *Washington National Airport, *Dulles International Airport, *Baltimore Washington International Airport, Demand, Usage

AB (27) This report describes a computer model, the Multiple Airport Demand Allocation Model, used by the Federal Aviation Administration (FAA) to determine the relative distribution of air passengers between Washington National, Dulles International, and the Baltimore-Washington International Airports for each of a number of airport policy alternatives which are being considered. This model and the report describing it support the FAA's policy statement for the Metropolitan Washington Airports. The model is based upon the understanding that choice of airports, when more than one is available, is determined largely by the relative attractiveness of each facility to air travelers. Attractiveness of each airport is influenced by the location of the facility relative to population and business centers; the speed and cost of airport access, the availability of convenient flight schedules; and airport capacity limitations among other things. All of these factors vary over time as population growth, access systems, and airport capacities change. (Author)

AN (1) AD-A088 158/XAG

FG (2) 010500
050100
070200
070300

200100

240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Environmental Impacts of Airport Policy Alternatives

AU (10) Fromme,William R.

RD (11) Sep 1977

PG (12) 89 Pages

RS (14) FAA-AVP-77-40

RC (20) Unclassified report

NO (21) Data Supplement to Rept. no. FAA-AVP-77-36, AD-A052 349.

AL (22) Availability: Document partially illegible.

DE (23) *Airports, *Aircraft noise, *Air pollution

District of Columbia, Maryland, Virginia, Population,

Exposure(General), Impact, Mathematical prediction, Ground vehicles,

Exhaust gases, Pollutants, Quantity, Mathematical models, Management,

Policies

ID (25) Environment impact, *Washington National Airport, *Dulles International Airport, Baltimore Washington International Airport

AB (27) The Federal Aviation Administration (FAA), as owner and operator of the Metropolitan Washington Airports (Washington National and Dulles International) is issuing a policy statement to guide development and operation of these facilities into the 1990's. The FAA's Metropolitan Washington Airport policy establishes a balance between a complex set of criteria which reflect transportation service, investment requirements and environmental impacts. This report provides much of the environmental assessment supporting the FAA's Metropolitan Washington Airport Policy Statement. The Noise Exposure Forecast (NEF) model is described, NEF data are presented by county and state; results of the airport emission analysis are listed and automobile emission levels are computed. A description of the range of policy options considered is contained in the appendix of the report. (Author)

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AN (1) AD-A088 203/XAG

FG (2) 010500
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY

TI (6) Metropolitan Washington Airport Investment Requirements

AU (10) Campbell,B.

Chastain,T.

Fromme,William

RD (11) Sep 1977
PG (12) 92 Pages
RS (14) FAA-AVP-77-38
RC (20) Unclassified report
NO (21) Technical supplement to Rept. no. FAA-AVP-77-36, AD-A052 349.
DE (23) *Airports, *Investments
District of Columbia, Maryland, Virginia, Terminal flight facilities,
Requirements, Costs, Management, Policies
ID (25) *Washington National Airport, *Dulles International Airport, *Baltimore
Washington International Airport, *Capital investments
AB (27) The Federal Aviation Administration (FAA), as owner and operator of the
Metropolitan Washington Airports, Washington National and Dulles
International, is issuing a policy statement of guide development and
operation of these facilities into the 1990's. The FAA's Metropolitan
Washington Airport policy establishes a balance between a complex set
of criteria which reflect transportation service, investment
requirements, and environmental impacts. This report presents the
results of an analysis of the impact of policy alternatives on capital
investment requirements for the Metropolitan Washington Airports. A
description of the range of policy options considered is contained in
the introduction. The FAA is recommending limiting air carrier aircraft
operations at National Airport to 40 per hour, and furthermore,
authorizing wide body aircraft at National, with the understanding that
wide body service there would average four departures per hour by 1990.
Estimated investments at National and Dulles required to support the
recommended policy total approximately \$119 million in 1976 dollars.
Given the uncertainties of investment forecasting, however, there are
no significant differences in investment requirements among the policy
alternatives evaluated.

AN (1) AD-A088 337/XAG
FG (2) 010500
050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY
TI (6) Analysis at Air Traffic Delays at Metropolitan Washington Airports
AU (10) Dratch, J.
Fromme, W. R.
RD (11) Sep 1977
PG (12) 31 Pages
RS (14) FAA-AVP-77-41
RC (20) Unclassified report
NO (21) Technical Supplement to the Metropolitan Washington Airport Policy

Analysis, AD-A052 349.
DE (23) *Airports, *Air traffic
Delay, Costs, Mathematical models, Computerized simulation, Management,
Policies
ID (25) *Washington National Airport, *Dulles International Airport, *Baltimore
Washington international airport
AB (27) The Federal Aviation Administration (FAA), as owner and operator of the
Metropolitan Washington Airports, Washington National and Dulles
International, is issuing a policy statement to guide development and
operation of these facilities into the 1990's. The FAA's Metropolitan
Washington Airport policy establishes a balance between a complex set
of criteria which reflect transportation service, investment
requirements, and environmental impacts. Each of the policy
alternatives considered has an associated disbenefit that is measured
as delay to aircraft. Aircraft delays incur cost penalties to both
aircraft operators and passengers. For aircraft operators these delays
result in increased costs, for the passengers these delays represent
lost time that may have been available for productive or leisure
activities. Thus, in the evaluation of the merits of each policy
alternative, the airside delay for each mode was determined. This
report presents the results of an analysis of the impact of policy
alternatives on air traffic delays at the Metropolitan Washington
Airports. A description of the range of policy options considered is
contained in the appendix of the report. (Author)

AN (1) AD-A099 853/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION LOS ANGELES CA WESTERN REGION
TI (6) Los Angeles International Airport Improvement Program.
DN (9) Interim rept.
RD (11) Sep 1977
PG (12) 57 Pages
RC (20) Unclassified report
NO (21) See also Revision dated 1 Sep 78, AD-A099 876
DE (23) *Airports
Capacity(Quantity), Forecasting, Air traffic, Ground traffic, Runways,
Taxiways, Utilization
ID (25) *Los Angeles International Airport
AB (27) This report is the product of an in-depth evaluation of Los Angeles
International Airport with respect to its current and potential
passenger handling capacity. It identifies the total capacity of the
airport system considering access, egress, groundside movement on the
airport, terminal facilities, airside movement on the airport and

approach and departure. Further, the specific effect is being evaluated for each incremental improvement in procedure or hardware. This will lead to the identification of a recommended list of prioritized improvements.

AN (1) AD-A043 473/XAG

**FG (2) 010600
140200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) An Overview of FAA Activities in Civil Aviation Metrication.

DN (9) Final rept.

AU (10) Yulo, Carlo

RD (11) Aug 1977

PG (12) 17 Pages

RS (14) FAA/RD-77/95

RC (20) Unclassified report

DE (23) *Civil aviation, *Metric system

Conversion, Aviation safety, Risk analysis, Standardization, Flight instruments, Commercial aircraft, Systems analysis, Costs, Scheduling, United States Government, Regulations

ID (25) Federal Aviation Administration, National Airspace System

AB (27) An overview of FAA involvement in civil aviation metrication activities is presented. The problems associated with conversion of the National Airspace System are summarized. A system analysis effort is proposed to obtain a better understanding of metric conversion impact and to forecast risk factor(s) in order not to compromise safety. An engineering and development program is outlined to serve as a stimulant to initiate or provoke further thinking in describing what needs to be done. (Author)

AN (1) AD-A044 824/XAG

**FG (2) 060400
061500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) Effects of Lithium Carbonate on Performance and Biomedical Functions

AU (10) Higgins, E. Arnold

Chiles, W. Dean

McKenzie, Jess M.

Davis, Audie W., Jr.

Funkhouser, Gordon E.

RD (11) Aug 1977

PG (12) 31 Pages

RS (14) FAA-AM-77-17

RC (20) Unclassified report

DE (23) *Lithium compounds, *Carbonates

Chemotherapeutic agents, Biomedicine, Response (Biology), Performance (Human), Urine, Excretion, Epinephrine, Heart rate, Prophylaxis, Males, Problem solving, Pattern recognition, Motor reactions, Steroids, Memory (Psychology)

ID (25) Norepinephrine

AB (27) The effects of a single 600-mg dose of lithium carbonate were evaluated in a study of 15 healthy, normal male subjects. Subjects were studied, on two occasions, by utilizing a double-blind design--once receiving the lithium carbonate and once receiving a lactose placebo. Measurements were made of (1) complex performance, using the CAMI Multiple Task Performance Battery, (2) hand steadiness, using the steadiness tester of the Motor Steadiness Kit, (3) heart rate, (4) the urinary excretion of 17-ketogenic steroids, epinephrine, and norepinephrine, and (5) short term memory, as measured by the Wechsler Memory Scale. The only statistically significant effect due to the drug was for short term memory, in which scores made by subjects taking the placebo were higher than scores made by those taking the lithium carbonate. (Author)

AN (1) AD-A045 429/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) The 1975 Accident Experience of Civilian Pilots with Static Physical Defects

AU (10) Dille, J. Robert

Booze, Charles F.

RD (11) Aug 1977

PG (12) 9 Pages

RS (14) FAA-AM-77-20

RC (20) Unclassified report

DE (23) *Aviation accidents, *Case studies, *Investigations, *Civil aviation
Civilian personnel, Pilots, Rates, Blindness, Color vision, Vision, Deficiencies, Aviation safety, Statistical analysis, Statistical data, Physical fitness

AB (27) The 1974 aircraft accident experience of civilian pilots with eight selected static physical defects has been examined and reported previously. Three categories--blindness or absence of either eye, deficient color vision with a waiver, and deficient distant vision--had significantly more accidents than were expected on the basis of observed-to-expected ratios. The 1975 accident data have now been examined. Again, the same three groups were found to have significantly more than their expected numbers of accidents. This year the reported recent and total flying times for all airmen with these defects were determined and accident rates were calculated. When the accident experience of airmen with any of these three static defects was compared with the active airman population accident experience per unit of recent and cumulative exposures, the rates for airmen with blindness or absence of an eye were still found to be significantly higher. Rates for airmen with color vision defects and a waiver were somewhat higher but of marginal significance. However, the rates for those with defective distant vision other than blindness or absence of an eye were similar and the difference was not significant. Only one of the FAA accident reports that were reviewed related the accident to the pilot's physical defect.

AN (1) AD-A045 507/XAG

FG (2) 061100

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Role of Monamine Oxidase Inhibition in The Acute Toxicity of Chlordimeform

AU (10) Smith,Paul W.

Robinson,Casey P.

Zelenski,Jane D.

Endecott,Boyd R.

RD (11) Aug 1977

PG (12) 13 Pages

RS (14) FAA-AM-77-19

RC (20) Unclassified report

DE (23) *Monoamine oxidase, *Toxicity, *Poisoning, *Pesticides, *Drugs

Lethality, Treatment, Ticks, Mites, Biological control, Effectiveness,

Phenylalanine, Reserpine, Rats, Males

ID (25) Acaricide chlordimeform, Chlordimeform, Chlorophenylalanine,

Tyrosine/alpha-methyl-para, Phenylephrine, Methysergide, Phentolamine

AB (27) This paper presents data from experiments on male rats performed to

determine whether drugs which interfere with central amine mechanisms would decrease the lethality of the acaricide chlordimeform (and thus be of potential value as antidotes for accidental poisoning) or increase chlordimeform lethality (and thus should be avoided by aerial applicators and others in contact with it). Neither reducing serotonin synthesis with p-chlorophenylalanine, reducing norepinephrine synthesis with DL-alpha-methyl-p-tyrosine nor depleting both amines with reserpine affected the lethality of chlordimeform. Likewise, blocking alpha-adrenergic receptors with phentolamine or the serotonergic receptors with methysergide, or both, did not influence chlordimeform lethality. The adrenergic agonist drug phenylephrine also did not affect chlordimeform lethality. Thus, the results indicate that: (1) monamine oxidase inhibition does not play a major role in acute chlordimeform lethality; (2) none of the drugs tested shows promise in the treatment of chlordimeform poisoning, and (3) aerial applicators or others would appear to incur little or no extra risk should they be taking any of the above drugs during potential exposure to chlordimeform. (Author)

AN (1) AD-A046 164/XAG

FG (2) 170703

170900

250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) A Preliminary Evaluation of the ATCRBS Signal Format for the BCAS Data Link

AU (10) Koenke, E. J.

Ebert, P. M.

Harman, W. H.

Spencer, N. A.

Weinberg, A.

RD (11) 31 Aug 1977

PG (12) 41 Pages

RS (14) FAA-EM-77-9

RC (20) Unclassified report

DE (23) *COLLISION AVOIDANCE, *RADAR BEACONS, *AIR TRAFFIC CONTROL RADAR BEACON

SYSTEMS, *DATA LINKS, *AIR TRAFFIC CONTROL SYSTEMS

RELIABILITY(ELECTRONICS), AIRBORNE, ALTIMETERS, TRANSPONDERS, INTERROGATORS, EVASION, CLIMBING, DIVING, VERY HIGH FREQUENCY, MULTICHANNEL COMMUNICATIONS

ID (25) Altitude encoders

AB (27) The evaluation of the integrity of the Air Traffic Control Radar Beacon System (ATCRBS) signal format for the Beacon Collision Avoidance System (BCAS) data link was based on measurements of the actual RF environment today, simulations of sophisticated signal processors, and basic calculations. The conclusions reached by the task force all relate to achieving a high integrity data link tailored to the BCAS application and were derived from tests run on the DABS ground-based reply processor-they are the following: (1) A data link with a high degree of error protection coding is essential. (2) Multiple transmissions - itself a form of coding -is essential. (3) A two-way data link is highly desirable from the point of view of the coordination logic. (Author)

AN (1) AD-A046 412/XAG

FG (2) 050100
050800
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Job Attitudes of Airway Facilities Personnel

AU (10) Smith, Roger C.
Hutto, Gary L.

RD (11) Aug 1977

PG (12) 87 Pages

RS (14) FAA-AM-77-21

RC (20) Unclassified report

DE (23) *Attitudes(Psychology), *Aviation personnel, *Job satisfaction
Airports, Surveys, Questionnaires, Motivation, Work, Work functions,
Employee relations, Management, Supervision, Supervisors, Workplace
layout

AB (27) A total of 2,366 employees of the Airway Facilities (AF) Service responded to a detailed questionnaire concerning job satisfaction and such factors as salary, shift schedule, workload, and geographic location. In general, AF employees reported satisfaction with employment by the AF Service, particularly in the areas judged most important by them: salary, job security, independence and personal responsibility, and achievement. Dissatisfaction was focused on various aspects of working conditions, such as shift rotation, management effectiveness, promotion opportunities, and paperwork. Detailed analyses of responses as a function of such variables as age, grade level, location, and AF program were also presented. The findings were

discussed in terms of the implications for improving the job-related attitudes of AF personnel. (Author)

AN (1) AD-A046 462/XAG

FG (2) 010500
050100
131300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) Establishment of New Major Public Airports in the United States.

RD (11) Aug 1977

PG (12) 140 Pages

RS (14) FAA-ASP-77-3

RC (20) Unclassified report

DE (23) *Airports

Construction, Planning, Transportation, Environmental impact
statements, Costs, Land use, Acquisition, Air traffic,
Capacity(Quantity), Public relations, Forecasting, Public
administration

AB (27) This study was performed in response to Section 26(2) of the Airport and Airway Development Act Amendments of 1976 (Public Law 94-353) which directed the Secretary of Transportation to conduct a study on the establishment of a new major public airports in the United States, including (a) identifying potential locations, (b) evaluating such locations, and (c) investigating alternative methods of financing the land acquisition and development costs necessary for such establishment. The report assesses needs for major new airports in the United States through the year 2000. Potential airport locations, the general size requirements of new airports, financing, and airport development issues and problems are also analyzed under a variety of future conditions. The potential need for new major airports is highly sensitive to the future forecasted activity, extent of accommodation of general aviation, effectiveness of the upgraded third generation air traffic control system in increasing capacity, and peak spreading, in that order. (Author)

AN (1) AD-A046 475/XAG

FG (2) 010500
050300
130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) Airport Land Banking.

DN (9) study rept. 1977-2000.

RD (11) Aug 1977

PG (12) 73 Pages

RS (14) FAA-ASP-77-7

RC (20) Unclassified report

DE (23) *Airports, *Land use, *Government procurement

Resource management, Land areas, State law, Federal law, Urban areas, Urban planning, Acquisition, Finance, Management planning and control, Natural resources

ID (25) *Land banking

AB (27) This study was performed in response to Section 26(1) of the Airport and Airway Development Act Amendments of 1976 (Public Law 94-353) which directed the Secretary of Transportation to conduct a study with respect to the feasibility, practicability, and cost of land bank planning and development for future and existing airports to be carried out through Federal, State, or local government action and report the results to Congress by July 12, 1977. Airport land banking was studied and analyzed from several different perspectives, including legal, economic, and financial, and the results of this study are reported in this document. (Author)

AN (1) AD-A048 352/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Wind Shear.

RD (11) Aug 1977

PG (12) 81 Pages

RS (14) FAA-ED-15-2A

RN (18) GIDEP-E116-2606

RC (20) Unclassified report

NO (21) Supersedes rept. no. FAA-ED-15-2, dated Mar 76, AD-A025 511.

DE (23) *WIND SHEAR, *AVIATION SAFETY, *WARNING SYSTEMS, *DETECTION WEATHER FORECASTING, AIRCRAFT LANDINGS, TAKEOFF, AVIATION ACCIDENTS,

WEATHER COMMUNICATIONS, DOPPLER RADAR, ACCIDENT INVESTIGATIONS, DISPLAY

SYSTEMS, AIRBORNE WARNING AND CONTROL SYSTEM

AB (27) This is a development plan for solutions to the aviation hazards created by low-level wind shear in the terminal area. It describes the four-year development program to satisfy National Airspace System (NAS) user needs for current and predicted information concerning wind shear at the Nation's airports. Included in the plan are: (1) efforts to better characterize low-level wind shear, (2) plans to define the hazards of wind shear for the aviation community, (3) tasks required to develop ground-based devices for hazardous wind shear detection and movement, (4) investigations into the use of airborne equipment to detect hazardous wind shear and then either warn the pilot of its presence and/or assist him in coping with it, (5) a description of how the data collected on wind shear will be processed, analyzed and reported, (6) plans to improve low-level wind shear predictions are presented, and (7) provisions for integrating wind shear data into the NAS by developing data formats and displays suitable to users (air traffic controllers, pilots and the National Weather Service). The FAA groups and other Federal Government agencies participating in this effort are identified. Program management responsibilities are addressed. A program schedule with milestones is presented and program funding requirements are identified. (Author)

AN (1) AD-A043 269/XAG

FG (2) 230600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Emergency Escape of Handicapped Air Travelers

AU (10) Blethrow, J. G.

Garner, J. D.

Lowrey, D. L.

Busby, D. E.

Chandler, R. F.

RD (11) Jul 1977

PG (12) 72 Pages

RS (14) FAA-AM-77-11

RC (20) Unclassified report

DE (23) *Escape systems, *Handicapped persons, *Air transportation Emergencies, Civil aviation, Seats, Aviation accidents, Time, Exits, Evacuation, Visual perception, Mobility

ID (25) LPN-FAA-AM-B-75/76/77-PRS-33

AB (27) This report describes a study conducted by the Civil Aeromedical Institute to investigate potential problems related to the emergency evacuation of civil aircraft carrying handicapped passengers. The study

includes an analysis of the movement of individual handicapped subjects in an aircraft cabin and the results of evacuation tests in which a portion of the test subjects either were handicapped or simulated handicaps. Data are given relative to assistance to handicapped passengers, the effects of groups of handicapped passengers, seating location, floor slope, and exit type on the evacuation time.

Suggestions by handicapped subjects and a summary of recent aircraft accidents involving evacuation of handicapped passengers are included as appendices to the report. (Author)

AN (1) AD-A043 842/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Noise Characteristics of Eight Helicopters

DN (9) Final rept.

AU (10) True, H. C.

Rickley, E. J.

RD (11) Jul 1977

PG (12) 170 Pages

RS (14) FAA-RD-77-94

RN (18) XH-DOT

RC (20) Unclassified report

DE (23) *HELICOPTERS, *AIRCRAFT NOISE

MEASUREMENT, FLIGHT, ACOUSTIC SIGNATURES, HOVERING, ROTOR BLADES,

TAIL

ROTOR, APPROACH

ID (25) *HELICOPTER NOISE, FLYOVERS, BELL 47G AIRCRAFT, BELL 206L AIRCRAFT, BELL 212 AIRCRAFT, HUGHES 300C AIRCRAFT, HUGHES 500C AIRCRAFT, SH-3B AIRCRAFT, CH-54B AIRCRAFT, CH-47C AIRCRAFT, IMPULSIVE NOISE

AB (27) This report describes the noise characteristics of Eight Helicopters during level flyovers, simulated approaches, and hover. The data was obtained during an FAA/DOT Helicopter Noise Program to acquire a data base for possible helicopter noise regulatory action. The helicopter models tested were the Bell 47G, 206L, and 212 (UH1N), the Hughes 300C and 500C, the Sikorsky S-61 (SH-3B) and S-64 (CH-54B) and the Vertol CH-47C. The acoustic data is presented as Effective Perceived Noise Level, A-weighted sound pressure level and 1/3 octave band sound pressure level with a slow meter characteristic per FAR Part 36. Selected waveforms and narrow band spectra are also shown. Proposed methods to quantify impulsive noise ('blade slap') are evaluated for a level flyover for each of the Helicopters. The tested helicopters can

be grouped into classes depending upon where the maximum noise occurs during a level flyover. Helicopters with the higher main rotor tip speeds propagate highly impulsive noise ahead of the helicopter. The maximum noise for most of the helicopters occurs near the overhead position and appears to originate from the tail rotor. Unmuffled reciprocating engine helicopters appear to have significant engine noise behind the helicopter. Noise levels, when compared as a function of gross weight and flown at airspeeds to minimize 'compressibility slap' form a band 7 EPNdB wide with a slope directly proportional to gross weight. The quieter helicopters have multibladed rotors and tip speeds below 700 fps.

AN (1) AD-A044 553/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Perceived Orientation of a Runway Model in Nonpilots during Simulated Night Approaches to Landing

AU (10) Mertens, Henry W.

RD (11) Jul 1977

PG (12) 14 Pages

RS (14) FAA-AM-77-12

RC (20) Unclassified report

DE (23) *NIGHT LANDINGS

PILOTS, VISUAL PERCEPTION, CUES(STIMULI), ILLUSIONS, GLIDE SLOPE, FLIGHT SIMULATORS, APPROACH LIGHTS, RUNWAYS, MOTION, RATES, ERROR ANALYSIS, FLIGHT PATHS, LOW LEVEL, ORIENTATION(DIRECTION)

ID (25) Parallax, LPN-FAA-AM-D-77-PSY-38

AB (27) Illusions due to reduced visual cues at night have long been cited as contributing to the dangerous tendency of pilots to fly too low during night landing approaches. The cue of motion parallax (a difference in rate of apparent movement of objects in the visual field) is frequently suggested as contributing to visual judgments of glide path but has not been systematically studied in relation to the night approach problem. Thus, the present experiment examined the effect of varying levels of motion parallax from both radial and vertical motion on perception of the orientation of a runway relative to the ground.

AN (1) AD-A044 554/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Readability of Alphanumeric Characters Having Various Contrast Levels as a Function of Age and Illumination Mode

AU (10) Welsh, Kenneth W.

Rasmussen, Paul G.

Vaughan, John A.

RD (11) Jul 1977

PG (12) 13 Pages

RS (14) FAA-AM-77-13

RC (20) Unclassified report

DE (23) *Visual acuity

Reading, Alphanumeric displays, Charts, Luminance, Thresholds(Physiology), Aging(Physiology), Target discrimination, Contrast, Background, Incandescent lamps, Colors

ID (25) *LPN-FAA-AM-D-77-PHY-93

AB (27) Readability data of alphanumeric characters that vary in figure-to-ground contrast ratio were obtained from 36 subjects; 12 subjects were placed in each of three age groups (20-25 yr, 40-45 yr, and 60-65 yr). Minimum illuminance required to identify all contrast combinations was determined at a viewing distance of 40 cm (15.7 in) under dim white and red illumination. Subjects identified all characters while viewing through an artificial pupil (2.0mm) and, when required, while wearing a spectacle lens correction. Data indicate a significant difference in luminance values for successive changes in contrast ratio under both illumination modes. Under red illumination, threshold luminance values showed a significant trend with age for all five contrast levels. Under white illumination, significant trends were indicated for three of the five contrast levels. With reference to the younger group, individuals in the middle-aged and older groups required an average luminance increase of 18 and 63 percent respectively for equivalent readability scores under white illumination. Under red lighting, corresponding values were 18 and 58 percent. (Author)

AN (1) AD-A044 555/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Refractive Error Characteristics of Early and Advanced Presbyopic Individuals

AU (10) Welsh, Kenneth W.

Rasmussen, Paul G.

Vaughan, John A.

RD (11) Jul 1977

PG (12) 10 Pages

RS (14) FAA-AM-77-14

RC (20) Unclassified report

DE (23) *Refraction, *Vision

Humans, Astigmatism, Adults, Errors, Algebraic functions, Distribution, Visual defects, Visual acuity, Measurement

ID (25) Hyperopic refraction, Myopic refraction, Astigmatic refraction, Age distribution, LPN-FAA-AM-A-77-PHY-95

AB (27) The frequency and distribution of ocular refractive errors among middle-aged and older people were obtained from a nonclinical population holding a variety of blue-collar, clerical, and technical jobs. The 422 individuals ranged in age from 35 to 69 years and were volunteers for several vision research studies conducted primarily at the FAA Civil Aeromedical Institute in Oklahoma City, Oklahoma. Data include frequency of various spherical (hyperopic or myopic) and astigmatic refractive errors, including differences in refractive errors in pairs of eyes. These data, together with information provided by other investigators, will allow a realistic assessment of the distribution of refractive errors and expected visual acuities in the adult population. (Author)

AN (1) AD-A044 556/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Objective Methods for Developing Indices of Pilot Workload

AU (10) Chiles, W. Dean

RD (11) Jul 1977

PG (12) 45 Pages

RS (14) FAA-AM-77-15

RC (20) Unclassified report

DE (23) *PILOTS

WORK MEASUREMENT, PERFORMANCE(HUMAN), MISSION PROFILES, FATIGUE(PHYSIOLOGY), JOB ANALYSIS, STRESS(PHYSIOLOGY), FLIGHT SIMULATION, MEMORY(PSYCHOLOGY), RESPONSE(BIOLOGY), TEST METHODS, LABORATORY PROCEDURES, MEASURE THEORY, MATHEMATICAL ANALYSIS

ID (25) LPN-FAA-AM-D-77-PSY-57

AB (27) This paper discusses the various types of objective methodologies that either have been or have the potential of being applied to the general

problem of the measurement of pilot workload as it occurs on relatively short missions or mission phases. Selected studies that have dealt with the workload measurement problem or some similar problem are reviewed in relation to their applicability to securing answers to operational questions. The types of methods are classified as: laboratory, analytic and synthetic, simulator, and in-flight. The paper concludes with a general discussion of the relative merits and some of the cautions to be observed in attempting to apply these methods and in trying to interpret the results with a view toward generalizing to operational situations. (Author)

- AN (1) AD-A044 557/XAG
FG (2) 061000
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Altitude Tolerance of General Aviation Pilots with Normal or Partially Impaired Spirometric Function
AU (10) Lategola, Michael T.
Flux, Marinus
Lyne, Peggy J.
RD (11) Jul 1977
PG (12) 13 Pages
RS (14) FAA-AM-77-16
RC (20) Unclassified report
DE (23) *Tolerances(Physiology), *Altitude, *Aviation safety, *Pilots, *Spirometry
Respiratory system, Cardiovascular system, Respiration, Blood pressure, Ventilation(Physiology), Heart rate, High altitude
ID (25) LPN-FAA-AM-A-77-PHY-96
AB (27) The altitude tolerance of 10 spirometrically impaired (SI) general aviation pilots with an average forced midexpiratory flow (FEF sub 25-75%) value of 65.1 percent was compared to that of 10 spirometrically normal (SN) pilots. Cardiorespiratory parameters assessed at ground level (GL) and at 8,000-and 12,500-ft altitudes were blood pressure, pulmonary ventilation, oxyhemoglobin saturation, temporal artery flow velocity, heart rate, and single-lead electrocardiogram. Although altitude exposure quantitatively displaced the SI group more than the SN group, the differences were not statistically significant at the probability level of 0.05. Unifocal premature ventricular contractions were present at GL in three of the pilots and showed no further changes at altitude. Therefore, the mean FEF sub 25-75% value of 65 percent of predicted normal for the SI group

becomes a reasonable option as an objective screening norm for acceptable tolerance to general aviation altitudes in the ambient-air-breathing range. (Author)

- AN (1) AD-A044 558/XAG
FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) The Effect of Increased Monitoring Load on Vigilance Performance Using a Simulated Radar Display.
DN (9) Technical rept.
AU (10) Thackray, Richard I.
Bailey, J. Powell
Touchstone, R. Mark
RD (11) Jul 1977
PG (12) 16 Pages
RS (14) FAA-AM-77-18
RC (20) Unclassified report
DE (23) *Air traffic controllers, *Radar operators
Radar target position simulators, Attention, Vigilance, Alertness, Boredom, Error analysis, Radar targets, Visual targets, Target discrimination, Performance(Human), Alphanumeric displays, Automation
AB (27) The present study examined the extent to which level of target density influences the ability to sustain attention to a complex monitoring task requiring only a detection response to simple stimulus change. The visual display was designed to approximate a futuristic, highly automated air traffic control radar display containing computer-generated alphanumeric symbols. Forty-eight male subjects, equally divided into three groups, were exposed to density levels of 4, 8, or 16 targets. Ten critical stimuli (signals) were randomly presented during each half-hour of the 2-hour session. Detection latency to the critical stimuli in the 16-target condition was significantly greater than latency to the 4- and 8-target conditions. There was no evidence of performance decrement in the two lower density conditions. The 16-target condition showed a significant progressive increase in mean detection latency, which was primarily the result of an increase in long latencies. The hypothesized decline in attention associated with this condition appeared to be independent of any major change in arousal level. (Author)
- AN (1) AD-A044 804/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Forecast of Commuter Airlines Activity.

DN (9) Aviation activity forecast 1977-1988

AU (10) Deosaran,Gerald

Sweezy,Henry

Van Duzee,Regina

RD (11) Jul 1977

PG (12) 141 Pages

RS (14) FAA-AVP-77-28

RC (20) Unclassified report

DE (23) *Commercial aviation, *Air transportation

Short range(Distance), Communities, Passengers, Passenger aircraft, Commercial aircraft, Mathematical models, Mathematical prediction, Planning, Urban areas, Shuttles

ID (25) *Commuter airline industry

AB (27) This report assesses the potential of the commuter airline industry including the identification of those short-haul low-density points that are likely prospects for future commuter service. The first section provides a national forecast of commuter airline enplanements, revenue passenger miles, number of aircraft operations and composition of fleet for 1975 to 1988. The second part of the report describes a model developed to disaggregate the activity forecast to individual points with existing service or anticipated future service, and provides forecasts for those points. (Author)

AN (1) AD-A056 529/XAG

FG (2) 131300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF ENVIRONMENTAL

QUALITY

TI (6) The Feasibility, Practicability, and Cost of the Soundproofing of Schools, Hospitals, and Public Health Facilities Located Near Airports.

RD (11) Jul 1977

PG (12) 48 Pages

RS (14) FAA-EQ-78-14

RC (20) Unclassified report

NO (21) Report to Congress study.

DE (23) *Noise reduction, *Sound, *Costs

Feasibility studies, Schools, Hospitals, Public health, Facilities, Airports

ID (25) Soundproofing

AB (27) This report concludes that soundproofing can achieve noise reductions of 10 to 20 db, is feasible and practicable, and may be cost effective at specific locations. (Author)

AN (1) AD-A046 442/XAG

FG (2) 010305

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Certification Study of a Derivative Model of a Small Jet Transport Airplane Using a Piloted Research Simulator.

DN (9) Final rept.

AU (10) Forrest,Raymond D.

RD (11) Jun 1977

PG (12) 86 Pages

RS (14) FAA/RD-77/105

RC (20) Unclassified report

DE (23) *Jet transport planes, *Flight simulators

Civil aviation, Federal law, Regulations, Requirements, Acceptability, Airworthiness, Aerodynamic characteristics, Flight control systems, Prototypes, Demonstrations, Flight testing, Flight, Quality, Aerodynamic stability, Reversible

ID (25) Certification, LPN-FAA-182-530-015

AB (27) The Flight Simulator for Advanced Aircraft (FSAA) at Ames Research

Center was used to evaluate the flying qualities of a small jet transport and those of a derivative model of that airplane. The objective was to define technical criteria that piloted simulations must meet to enable their increased use for demonstrating compliance with transport category aircraft airworthiness requirements.

Flying-qualities data were obtained for numerous test configuration and conditions using conventional certification flight test procedures.

These data correlated well with the basic airplane data from the manufacturer's certification test report. Analysis of the simulator data showed valid results in critical test cases, such as the demonstration of static longitudinal stability and minimum control speed, with confidence that all influencing and limiting factors were identified. An important aspect was the accurate simulation of the control force-feel qualities of the reversible flight control system.

The simulator was judged to have duplicated actual flight results with a high degree of confidence. It is concluded that it is technically feasible to pursue the increased use of simulation in conducting derivative airplane certification evaluations of the scope reported in

this report. (Author)

AN (1) AD-A049 793/XAG

**FG (2) 010500
050300**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) An Analysis of Continued Operation of Selected Airport Traffic Control Towers (ATCT)

DN (9) Draft rept.

AU (10) Zaidman, Steven

RD (11) Jun 1977

PG (12) 75 Pages

RS (14) FAA-ASP-77-6

RC (20) Unclassified report

DE (23) *Air traffic control system analysis, *Cost analysis, *Cost benefits Criteria, Removal, Air traffic control systems, User needs, Aviation safety

AB (27) This report evaluates the merits of continued operation of existing FAA airport traffic control towers using the benefit-cost technique.

Considered are airport safety and efficiency benefits as well as the costs of continued facility operation and of dismantling and relocation. The analysis identifies 73 current tower locations as not worthy of continued operation on economic grounds. Only nine sites are selected as candidates for decommissioning when using existing noneconomic discontinuance criteria. The study is divided into three parts. Part A describes the detailed benefit-cost rationale and methodology. Part B provides an historical account of the evolution of tower establishment and discontinuance criteria. Part C examines the impact of uneconomical tower locations identified by the benefit-cost analysis, i.e., those sites where costs of continued tower operation exceed benefits. This part also offers several alternative options for formulating an agency policy for discontinuing tower operations.

(Author)

AN (1) AD-A065 296/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Flight Tests of a Low-Cost Omega Navigation Receiver.

DN (9) Final rept.

AU (10) Moore, Robert

RD (11) Jun 1977

PG (12) 76 Pages

RS (14) FAA-RD-77-70

RN (18) GIDEP-E093-2458

RC (20) Unclassified report

DE (23) *OMEGA NAVIGATION, *RECEIVERS

NAVIGATIONAL AIDS, VERY LOW FREQUENCY, GLOBAL, SPECIFICATIONS, FLIGHT

TESTING, LOW COSTS, TRANSMISSION LOSS, SIGNAL TO NOISE RATIO

ID (25) *Mark-3 Omega navigation receivers

AB (27) This report describes flight tests performed to investigate the feasibility of using low-cost Omega avionics for enroute navigation, and to assess Omega navigation as a supplement to VOR/DME in remote areas. Tested was a prototype Mark III Omega receiver. Results indicate that low-cost Omega avionics provides acceptable guidance during quiescent propagation periods. Flights during diurnal transition periods of the day would require compensation for anticipated phase changes. There were no indications of terrain sensitivity at the minimum enroute altitudes flown.

AN (1) AD-A043 785/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) Establishment Criteria for Visual Approach Slope Indicator (VASI).

DN (9) Final rept.

AU (10) Roman, Jose, Jr

RD (11) May 1977

PG (12) 42 Pages

RS (14) FAA-ASP-76-2

RC (20) Unclassified report

DE (23) *Landing aids, *Approach lights

Landing lights, Marker lights, Indicator lights, Runways, Visual flight rules, Visual signals, Glide slope, Beacon lights, Aircraft landings, Benefits, Cost benefits, Cost analysis, Aviation safety, Aviation accidents

ID (25) *Visual Approach Slope Indicators, VASI(Visual Approach Slope Indicators)

AB (27) This report develops revised establishment and discontinuance criteria for Visual Approach Slope Indicator (VASI) which provide Visual Flight

Rules (VFR) guidance only. Criteria are based upon detailed benefit/cost methodology. This approach takes into account the number of aircraft landings by user class with variations depending upon whether or not the runway is equipped with an Instrument Landing System. Benefits derived from a VASI were principally in the area of safety which are obtained by improved guidance during final VFR approaches. Revised criteria require that a ratio value be computed for each of the three types of operations (air carrier, air taxi, and general aviation including military). The three ratios are then added to obtain a total ratio value, and this is multiplied by the runway utilization to obtain a net ratio value. If this net ratio value is equal to 1 or greater, then the runway is a candidate for a VASI. In the short term, it is estimated that 590 runways now without a VASI will qualify. Over the next ten years, an additional 388 runways are expected to qualify for a VASI. (Author)

AN (1) AD-A043 908/XAG
FG (2) 090100
131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Federal Aviation Administration - Florida Institute of Technology Workshop on Grounding and Lightning Protection.

DN (9) Final rept.

RD (11) May 1977

PG (12) 525 Pages

RS (14) FAA-RD-77-84

RC (20) Unclassified report

NO (21) See also Rept. nos. FAA-RD-74-147, AD-785 858, FAA-RD-75-106, AD-A013 618 and FAA-RD-76-104, AD-A027 362.

DE (23) *Ground(Electrical), *Electromagnetic shielding, *Lightning arresters Bonding, Electrical insulation, Lightning, Electromagnetic pulses, Impulse noise, Antistatic techniques, Protection, Transients, Suppression, Surges, Electronic equipment, Electrical equipment, Terminal flight facilities, Static eliminators, Electrical grounding

ID (25) Electrical noise

AB (27) A state-of-art review and background research reveals a number of opinions as to the preferred techniques of grounding of electronic equipment and systems. These techniques become important when protection must be provided for transients induced by lightning, electromagnetic pulses (EMP), and other sources. The Systems Research and Development Service of the Federal Aviation Administration in

conjunction with the Florida Institute of Technology conducted a workshop which brought together distinguished experts in the fields of grounding, lightning, transient protection and EMP protection. This report contains the papers presented at the workshop. This is the fourth workshop conducted on the subject. The papers presented at the 1974, 1975, and 1976 workshops are contained in Report No's. FAA-RD-74-147, FAA-RD-75-106, and FAA-RD-76-104. (Author)

AN (1) AD-A056 752/XAG

FG (2) 010300

130200

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF ENVIRONMENTAL QUALITY

TI (6) Impact of Noise on People.

RD (11) May 1977

PG (12) 41 Pages

RS (14) FAA-EQ-78-12

RC (20) Unclassified report

DE (23) *Aircraft noise, *Noise pollution

Hearing, Urban areas, Loudness, Sound pressure, Intensity, Frequency, Pressure measurement, Sleep deprivation, Occupational diseases

AB (27) This report includes technical information on the effect of noise in both 'cumulative metrics' and single events. (Author)

AN (1) AD-B246 020/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF PUBLIC AFFAIRS

TI (6) Validity of the Cattell 16 Personality Factor Questionnaire and Other "Non-Cognitive" Tests for Selection and Placement of Air Traffic Control Specialists

AU (10) Coleman, Joseph G.

RD (11) 08 May 1977

PG (12) 39 Pages

CT (15) DOT-FA75WA-3646

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *PERSONALITY TESTS, *CLINICAL PSYCHOLOGY

PERSONNEL SELECTION, AIR TRAFFIC CONTROLLERS, PERSONALITY,
MEDICAL
EXAMINATION
DL (33) 12

AN (1) AD-A040 322/XAG

FG (2) 050800
060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION

MEDICINE

TI (6) Psychophysiological Effects of Aging: Developing a Functional Age
Index for Pilots: I. A Survey of the Pertinent Literature

AU (10) Gerathewohl, Siegfried J.

RD (11) Apr 1977

PG (12) 27 Pages

RS (14) FAA-AM-77-6

RC (20) Unclassified report

DE (23) *Aging(Physiology), *Psychophysiology, *Pilots

Indexes(Ratios), Literature surveys, Psychological tests, Performance
tests, Medical examination, Biostatistics, Aviation medicine,
Commercial aviation, Bibliographies

AB (27) This report gives a survey about selected material concerning age and
aviation-related psychophysiological functions. The author analyzes the
results obtained by many investigators from longitudinal and
cross-sectional studies that may be useful for the development of a
functional age index for pilots. Particular emphasis is given to
studies on the effect of age differences as measured by standardized
tests of sensory, perceptual, mental, cognitive and neurophysiological
functions and processes, and the quantitative or objective assessment
of personality traits and structure. A few examples of graphs, tables,
curves, and mathematically expressed relationships between these
parameters and age are given. The age-related changes of these
variables and their implications to possible and actual pilot
performance are discussed. (Author)

AN (1) AD-A040 561/XAG

FG (2) 010301
200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Helicopter Noise Measurements Data Report. Volume I. Helicopter Models:
Hughes 300-C, Hughes 500-C, Bell 47-G, Bell 206L

AU (10) True, Harold C.

Letty, Richard M.

RD (11) Apr 1977

PG (12) 384 Pages

RS (14) FAA-RD-77-57-1

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A040 562.

DE (23) *Aircraft noise, *Helicopters

Data bases, Hovering, Level flight, Approach, Glide slope

ID (25) Hughes 300-C aircraft, Hughes 500-C aircraft, Bell 47-G aircraft, Bell
206-L aircraft

AB (27) This data report contains the measured noise levels obtained from an
FAA Helicopter Noise Test Program. The purpose of this test program was
to provide a data base for a possible helicopter noise certification
rule. The noise data presented in this two volume report is primarily
intended as a means to disseminate the available information. Only the
measured data is presented in this report. All FAA/DOT data analysis
and comparisons will be presented in a later report which is scheduled
for distribution in July, 1977. The eight helicopters tested during
this Helicopter Noise Test Program constituted a wide range of gross
weights and included participation from several helicopter
manufacturers. The helicopter models used in this test program were the
Hughes 300C, Hughes 500C, Bell 47-G, Bell 206-L, Bell 212 (UH-1N),
Sikorsky S-61 (SH-3A), Sikorsky S-64 'Skycrane' (CH-54B), and Boeing
Vertol 'Chinook' CH-47C. Volume I contains the measured noise levels
obtained from the first four helicopters while Volume II contains the
data from the remaining four. The test procedure for each helicopter
consisted of obtaining noise data during hover, level flyover, and
approach conditions. The data presented in this report consists of time
histories, 1/3-octave band spectra, EPNL, PNL, dBA, dBD and OASPL noise
levels. (Author)

AN (1) AD-A040 562/XAG

FG (2) 010301
200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Helicopter Noise Measurements Data Report. Volume II. Helicopter
Models: Bell 212 (UH-1N), Sikorsky S-61 (SH-3A), Sikorsky S-64
'Skycrane' (CH-54B), Boeing Vertol 'Chinook' (CH-47C)

AU (10) True, Harold C.
Letty, Richard M.
Rockley, E. J.
RD (11) Apr 1977
PG (12) 420 Pages
RS (14) FAA-RD-77-57-2
RC (20) Unclassified report
NO (21) See also Volume 1, AD-A040 561.
DE (23) *Aircraft noise, *Helicopters
Data bases, Hovering, Level flight, Approach, Glide slope
ID (25) UH-1N aircraft, SH-3A aircraft, CH-54B aircraft, CH-47C aircraft, H-1
aircraft, H-3 aircraft, H-54 aircraft, H-47 aircraft
AB (27) The helicopter models used in this test program were the Hughes 300C,
Hughes 500C, Bell 47-G, Bell 206-L, Bell 212 (UH-1N), Sikorsky S-61
(SH-3A), Sikorsky S-64 'Skycrane' (CH-54B), and Boeing Vertol
'Chinook' CH-47C. Volume I contains the measured noise levels obtained
from the first four helicopters while Volume II contains the data from
the remaining four.

AN (1) AD-A040 978/XAG
FG (2) 131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION

MEDICINE

TI (6) An Epidemiologic Investigation of Occupation, Age, and Exposure in
General Aviation Accidents

AU (10) Booze, Charles F., Jr
RD (11) Apr 1977
PG (12) 24 Pages
RS (14) FAA-AM-77-10
RC (20) Unclassified report
DE (23) *Aviation accidents, *Accident investigations
Epidemiology, Medical examination, Exposure(Physiology)
ID (25) Age distribution, Occupation
AB (27) This study involved a census of 4,491 general aviation
accident-involved airmen records for the year 1974 to obtain relevant
occupation, age, exposure, and other epidemiologic profile information
of a descriptive nature. Population comparison data for occupation,
age, and exposure were obtained from a sample of 9,414 currently
certified airmen medical records as of December 1974. Occupation was
studied under assumptions of similar exposure, total cumulative
exposure by occupation, and recent exposure by occupation with the
outcome under at least two methods of analysis being the identification

of physicians, lawyers, sales representatives, farmers, and housewives
as having high accident experience.

AN (1) AD-A041 304/XAG
FG (2) 010500
050300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
POLICY

TI (6) Profiles of International Passengers at U. S. Airports-1976.

RD (11) Apr 1977
PG (12) 277 Pages
RS (14) FAA-AVP-77-27
RC (20) Unclassified report
AL (22) Availability: Microfiche copies only.
DE (23) *Passengers, *International airports, *Air transportation
Travel, Statistics, United States, Tables(Data)
AB (27) Summary data on passenger traffic between the United States and foreign
countries are provided for the Calendar Year 1976. Data was selected
from Form I-92, 'Aircraft/Vessel Report' of the U. S. Immigration and
Naturalization Service. Statistics include passenger origin and
destination ports, the nationality of the carriers, and the number of
U.S. and Non-U. S. citizens on each flight. International operations -
both departures and arrivals - by U. S. airport are also included.
Passenger flows are broken down by geographical regions, Domestic and
foreign carriers. Number of passengers carried between each of 66 U. S.
ports and individual world countries is displayed in tables by world
areas. Charts depict for each of the U. S. airports total passengers on
U. S. and foreign carriers, on all Flags and U. S. and foreign carriers
with percentages of U. S. and Non-U. S. citizens. Data is by world
region with an All Ports summary. The total U. S. international traffic
operating out of all U. S. ports is distributed among ten Foreign World
Areas. International travel to and from the Caribbean, Bermuda and
Canada is not included in this study. (Author)
23

AN (1) AD-A041 335/XAG
FG (2) 010500
130200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Field Compaction of Bituminous Mixes for Airport Pavements.

DN (9) Final rept.

AU (10) McLaughlin,Aston L.

RD (11) Apr 1977

PG (12) 63 Pages

RS (14) FAA-RD-77-42

RC (20) Unclassified report

DE (23) *Pavements, *Airports, *Bituminous coatings

Runways, Compacting, Strength(Mechanics), Asphalt, Loads(Forces), Requirements

AB (27) The report identifies the rationale for the Federal Aviation

Administration requirement concerning the compaction of bituminous airport pavements (98 percent minimum of Marshall density) and outlines the mix design and construction factors directly affecting pavement compactibility. Information on the practices and problems associated with field compaction was gathered from interviews with cognizant field staff and notable experts, laboratory and field records of recently constructed airport pavements and from experimental and analytical research efforts by several agencies. The findings are that the requirement is justifiable on the basis of expected pavement strength and durability; and that if certain design, construction and testing procedures are not within strict limits difficulty or failure to achieve adequate compaction will result. Recommendations are made that will assure and facilitate the attainment of high quality pavements. (Author)

AN (1) AD-A110 349/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 5, 1 Jul-31 Dec 76.

RD (11) 05 Apr 1977

PG (12) 47 Pages

RS (14) FAA-ACS-82-5

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Security, *Civil aviation

Aviation safety, Commercial aviation, Threats, Sabotage, Aircraft hijacking, Bombs, Explosives, Weapons, Detectors, Passengers, Terrorism, Prevention

AB (27) The report includes an analysis of the current threat against civil

aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A038 538/XAG

FG (2) 050900

060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Intermediate Visual Acuity of Presbyopic Individuals with and without Distance and Bifocal Lens Corrections

AU (10) Welsh,Kenneth W.

Rasmussen,Paul G.

Vaughan,John A.

RD (11) Mar 1977

PG (12) 17 Pages

RS (14) FAA-AM-77-7

RC (20) Unclassified report

DE (23) *Visual acuity, *Aging(Physiology), *Aviation medicine
Range(Distance), Pilots, Physical fitness, Eyeglasses

AB (27) Visual acuity was determined at the intermediate range for older individuals with various combinations of ocular refractive error (nine subcategories) and accommodative power (three subcategories). Subjects (N=249) read numerals ranging in size to measure visual acuity from 20/80 to 20/15 at 51, 76, and 102 cm (20, 30, and 40 in) with 50 fL luminance. Monocular visual acuity scores were determined both with the subject's optimum spectacle lens correction for distance vision (6 m, 20 ft) and near vision (0.4 m, 16 in) and without lenses. For subjects with low accommodative power, neither the distance nor the near lens correction provides normal vision throughout the intermediate range. At 102 cm vision is better with the distance correction, while at 51 cm vision is better with the near correction. At 76 cm neither lens offers normal vision.

AN (1) AD-A038 847/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Current Aviation Statistics. Air Traffic Activity. Terminal Area

Relationships. Fiscal Year 1976

- AU (10) Thompson, George E.
RD (11) Mar 1977
PG (12) 59 Pages
RC (20) Unclassified report
NO (21) See also AD-A032 605.
DE (23) *Commercial aviation, *Terminal flight facilities, *Air traffic control terminal areas
Flight, Diurnal variations, Statistical data, Tables(Data)
AB (27) The current study of terminal area airport operations encompasses FY 1976 data for 415 airports at which FAA traffic control towers operated the entire twelve months period. These are presented in two primary groups: Air Commerce Airports, and General Aviation Airports. Each tower is requested to report the peak daily traffic count during the previous twelve months for air carrier, itinerant (including air carrier), total aircraft (including local) and instrument operations. Peak counts for the various categories need not occur on the same day. These peak days can be accurately identified from the daily traffic counts recorded on FAA Form 7230-1. Busy hour estimates are obtained from periodic counts 60 minutes in duration. These counts are made during known high activity periods of each traffic category. From this sample, tower personnel select a count which is representative of daily busy hour activity for each category. The tables contain traffic estimates for each airport at which an air traffic control tower operated during all of FY 1976. Provided with peak day and busy hour are average day and hour operations computed from annual operations. Measures of peaking characteristics are given by the ratios of peak day to average day and busy hour to average hour for individual airports and airport size groups. (Author)

AN (1) AD-A039 891/XAG

FG (2) 010500
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
POLICY

TI (6) Palo Alto Airport Tower Operations. Hourly Activity Data for the Years 1970 - 1971 with Emphasis on General Aviation Activity

AU (10) McKoy, Barrington G.
Travis, Friason
Hannan, Bernard

RD (11) Mar 1977
PG (12) 89 Pages

RS (14) FAA-AVP-77-21

RC (20) Unclassified report

DE (23) *Civil aviation, *Airports
Airport control towers, California, Statistics, Records, Weather, Tables(Data), Graphs

ID (25) *Palo Alto(California)

AB (27) During calendar years 1970 and 1971, the control tower at Palo Alto, a general aviation airport with consistently good weather, kept an hourly total log of aviation activities by the categories: local general aviation, itinerant general aviation, local military, itinerant military, air carrier, and instrument operation. The log was maintained for 16 hours per day, from 8:00 a.m. until midnight. This report presents and discusses 15 qualitative data reference graphs and 48 quantitative data tables, including the detailed source data listing. It also discusses the qualification of the source data, mentions some of the more obvious conclusions which may be drawn from it, and encourages its further analysis and use. (Author)

AN (1) AD-A040 432/XAG

FG (2) 020500
061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE

TI (6) A Study of Effects of Hyperthermia on Large, Short-Haired Male Dogs: A Simulated Air Transport Environmental Stress

AU (10) Hanneman, G. D.
Higgins, E. A.
Price, G. T.
Funkhouser, G. E.
Grape, P. M.

RD (11) Mar 1977

PG (12) 9 Pages

RS (14) FAA-AM-77-8

RC (20) Unclassified report

DE (23) *Heat stress(Physiology), *Dogs
Hyperthermia, High humidity, High temperature, Exposure(Physiology), Pathology, Blood chemistry, Body temperature, Heart rate, Carbon dioxide, pH factor, Kidneys, Necrosis, Brain damage, Myocardium, Summer, Air transportation, Simulation, Hair

AB (27) When dogs are shipped by air transport, they can encounter environmental temperatures as high as 130.0 F during the summer months. Heat-induced hyperthermia can be a major problem in dogs. To assess

some aspects of the heat stress problem, 20 dogs were exposed to an ambient temperature of 130. 0 F for 30 minutes--10 dogs at 15% relative humidity and 10 at 35% relative humidity. Transient and permanent changes were seen; however, no dogs died from exposure. All dogs exhibited increases in heart rate, rectal temperature, blood pH, hemoglobin, packed cell volume, and red blood cell count while body weight and blood carbon dioxide decreased. There were also differences between the two groups for blood pH, blood carbon dioxide, rectal temperature, and weight loss. The major histological tissue changes attributed to hyperthermia were fragmentation of the myocardium, acute cortical necrosis in the kidneys, and marked degenerative changes in the cerebellum and cerebral cortex that were considered severe and permanent.

AN (1) AD-A043 646/XAG

FG (2) 010300
061100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE

TI (6) Inhalation Toxicology: I. Design of a Small-Animal Test System. II. Determination of the Relative Toxic Hazards of 75 Aircraft Cabin Materials.

DN (9) Rept. for Oct 74-Sep 76

AU (10) Crane, Charles R.
Sanders, Donald C.
Endecott, Boyd R.
Abbott, John K.
Smith, Paul W.

RD (11) Mar 1977

PG (12) 59 Pages

RS (14) FAA-AM-77-9

RC (20) Unclassified report

DE (23) *Toxicology, *Aircraft cabins, *Nonmetals, *Combustion products
Inhalation, Pyrolysis, Incapacitation, Toxicity, Laboratory animals,
Plastics, Synthetic materials, Test methods

AB (27) In an effort to further the cause of increased safety for those who ride in commercial aircraft, this paper presents a detailed description of the genesis of a small-scale, laboratory test system that utilizes small animals to evaluate the relative toxic hazard of combustion products generated by the thermal decomposition of nonmetallic materials. It includes: a discussion of the concepts that led to the design; detailed instructions for fabricating the system; operating

parameters and instructions for conducting a test; an evaluation of the system's performance as determined by the testing of 75 aircraft cabin materials; the utilization of animal response time as a basis for expressing relative toxicity; and a discussion of the derivation of an 'inhalation dose' concept that promises to be more useful than 'lethal concentrations.' (Author)

AN (1) AD-A037 235/XAG

FG (2) 050900
061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL
INST

TI (6) Ten-Year Survey of Altitude Chamber Reactions Using the FAA Training Chamber Flight Profiles

AU (10) Valdez, Charles D.

RD (11) Feb 1977

PG (12) 12 Pages

RN (18) FAA-AM-77-4

RC (20) Unclassified report

DE (23) *Decompression sickness, *Hypobaric chambers, *Physical fitness
Flight crews, High altitude, Aviation medicine, Physiological effects,
Signs and Symptoms

AB (27) The Federal Aviation Administration since 1962 has trained nonmilitary government-employed flightcrews and civilian pilots in the aspects of altitude and its effects on the human body. The standard military altitude chamber flight profile was not used and the reasons are explained. Two different chamber profiles were used for a 10-year period and both included a rapid decompression, but the altitudes attained were limited to 25,000 ft (7,620 m) and 29,000 ft (8,839 m). During the 10-year period cited in this report, 4,759 students were exposed to these altitudes and none experienced an evolved gas problem. (Author)

AN (1) AD-A038 297/XAG

FG (2) 060400
061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE

TI (6) Sleep in Air Traffic Controllers

AU (10) Saldivar, J. T.

Hoffmann,S. M.

Melton,C. E.

RD (11) Feb 1977

PG (12) 19 Pages

RS (14) FAA-AM-77-5

RC (20) Unclassified report

DE (23) *Sleep, *Air traffic controllers

Variations, Scheduling, Jobs, Biological rhythms,

Adaptation(Physiology), Stress(Physiology), Attention,

Performance(Human), Fatigue(Physiology), Rest, Quality, Statistical

analysis, Aviation safety

ID (25) Job rotation, Work shifts

AB (27) Data obtained from sleep logs maintained for a period of 5 weeks by 185

air traffic controllers indicate that on a weekly basis there is no

significant difference in the amount of sleep obtained by controllers

working the 2-2-1 rotation pattern and that obtained by those on the

5-day rotation pattern. Controllers working the 2-2-1 rotation pattern

slept significantly less prior to the midshift than they did before the

evening and day shifts. On both the 2-2-1 and 5-day rotation patterns,

the most sleep obtained was on the evening shift followed by the day

shift and midshift respectively. Approximately half the controllers

indicated satisfaction with their present shift rotations; however,

preferences indicate that they would prefer to work a shift rotation

that excluded the midshift. Age and experience do not appear to be

related to pattern of sleep or amount of sleep obtained. 'Fatigue',

'weakness', and 'somnolence' were complaints most often expressed on

the midshift on both rotation patterns.

AN (1) AD-A056 032/XAG

FG (2) 010305

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT

STANDARDS SERVICE

TI (6) Jet Transport Rejected Takeoffs.

DN (9) Final rept.

AU (10) Ostrowski,David W.

RD (11) Feb 1977

PG (12) 27 Pages

RS (14) AFS-160-77-2

RC (20) Unclassified report

DE (23) *Takeoff, *Jet transport planes

Aviation safety, Accident investigations, Rejection, Aircraft tires,

Runways, Weather, Hazards, Brakes

AB (27) Jet transport airplane rejected takeoffs (RTO's) at heavy weights and

high speeds and RTO accidents/incidents involving tires, wheels, and brakes have prompted an assessment of RTO test procedures and the system by which RTO accountability is achieved for day-to-day operations. It is concluded that 3 to 4% of air carrier accidents, fatalities, and aircraft losses can be attributed to tire/wheel/brake related RTO's. Tire failures and the lack of accountability for the increased accelerate-stop distance required on wet/slippery runways are significant factors. Recommendations are made for reducing the incidence of tire failures and accounting for the increased accelerate-stop distance necessitated by wet/slippery runways. (Author)

AN (1) AD-A036 772/XAG

FG (2) 050900

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Estimation of UG3RD Productivity Impacts.

DN (9) Final rept.

AU (10) Rodgers,John M.

RD (11) Jan 1977

PG (12) 58 Pages

RS (14) FAA-AVP-77-4

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Productivity

Automation, Personnel management, Cost effectiveness, Manpower, Costs,

Air traffic controllers

AB (27) This study estimates the value of savings attainable from reduced Air

Traffic Service staff requirements associated with implementation of

the Upgraded Third Generation Air Traffic Control System (UG3RD).

Estimates of staff requirements, assuming either a continuation of the

present air traffic control system or alternatively, various UG3RD

improvements, were prepared from an analysis of specific job functions

at sample facilities. Sample estimates were expanded to provide

estimates of required staff at all centers and 30 selected TRACONS

and/or terminals for the period 1976 and 2000. Manpower differentials

were calculated and valued at an average 1975 wage plus benefit cost.

(Author)

AN (1) AD-A037 234/XAG

FG (2) 050200

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Index to FAA Office of Aviation Medicine Reports: 1961 through 1976

AU (10) Murcko,LaNelle E.

Dille,J. Robert

RD (11) Jan 1977

PG (12) 65 Pages

RS (14) FAA-AM-77-1

RC (20) Unclassified report

DE (23) *Aviation medicine, *Indexes

Stress(Physiology), Aerial delivery, Air traffic controllers, Aviation accidents, Performance(Human), Safety, Anthropometry, Visual perception

ID (25) Federal Aviation Administration

AB (27) An index to Office of Aviation Medicine Reports (1964-1976) and Civil Aeromedical Research Institute Reports (1961-1963) is presented as a reference for those engaged in aviation medicine and related activities. It provides a listing of all FAA aviation medicine reports published from 1961 through 1976 by year, number, author, title, and subject.

AN (1) AD-A037 801/XAG

FG (2) 050300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Policy Analysis of the Upgraded Third Generation Air Traffic Control System.

DN (9) Final rept.

AU (10) Fromme,William R.

Rodgers,John M.

RD (11) Jan 1977

PG (12) 155 Pages

RS (14) FAA-AVP-77-3

RC (20) Unclassified report

DE (23) *Air traffic control systems

Cost analysis, Airports, Congestion, Cost benefits, Aviation safety, Systems approach, Air traffic control terminal areas, User needs, Policies

ID (25) *Third generation air traffic control system

AB (27) This report provides a review of costs and benefits of the Upgraded

Third Generator Air Traffic Control System (UG3RD) from a systems perspective and also reviews the feasibility and effectiveness of complementary policy strategies. The analysis values the costs and benefits of five alternative systems composed of potential combinations of UG3RD components. For each system, the added cost of airport and airway service was quantified for both the Federal Aviation Administration (FAA) and for airway users. Benefits consisted of increased airport capacity and reduced delay, savings from reduced FAA staff requirements, and improved airway system safety. In addition to estimating costs and benefits of various investments, the study investigates the impacts of airport quotas and peak pricing, increased use of satellite airports, and terminal control areas. (Author)

AN (1) AD-A038 296/XAG

FG (2) 060400

060500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Spirometric Assessment of Potential Respiratory Impairment in General Aviation Airmen

AU (10) Lategola,Michael T.

Flux,Marinus

Lyne,Peggy J.

RD (11) Jan 1977

PG (12) 10 Pages

RS (14) FAA-AM-77-3

RC (20) Unclassified report

DE (23) *Pilots, *Respiratory diseases, *Spirometry

Lungs, Respiratory system, Aviation safety, Aviation medicine, Statistical analysis, Aging(Physiology), Smoke, Tobacco

ID (25) Smoking

AB (27) Chronic obstructive pulmonary disease continues to manifest an increasing prevalence in male Americans. A recent study of commercial airline pilots revealed a 12-percent prevalence of minor-to-moderate spirometric impairment. Because commensurate data were not available for general aviation pilots, in whom such impairment could also compromise flight safety, a parallel study was made. The British Medical Research Council and smoking questionnaires, chest expansion, and spirometric measurements of FEV(1), FVC, FEV(1%), MVV, and FEF(25-75%) were assessed in 181 male general aviation pilots. All data showed a general relationship to increasing age and amount of smoking. Based on FEV(1%) and FEF(25-75%) combined, minor degrees of spirometric

impairment were exceeded by 25.4 percent of the pilots and moderate degrees, by 12.7 percent. Negligible impairment was reflected in the remaining spirometric parameters. Subsequent testing of such spirometrically impaired pilots for altitude, fatigue, and orthostatic tolerances related to general aviation is planned. (Author)

AN (1) AD-A039 851/XAG

**FG (2) 210400
210700**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Directed Safety Investigation - Use of Higher Leaded Fuels in Engines Originally Certificated for Use With Grade 80 Aviation Gasoline.

DN (9) Final rept.

RD (11) Jan 1977

PG (12) 27 Pages

RS (14) FAA-AFS-140-77-1

RC (20) Unclassified report

DE (23) *Aviation gasoline, *Lead compounds, *Reciprocating engines Substitutes, Safety, Spark plugs, Intake valves, Maintenance, Economic analysis, Logistics management, Geographical distribution, Flight testing, Specifications, Standards, Commercial aviation

ID (25) TEL(Tetraethyl lead), Tetraethyl lead

AB (27) A Directed Safety Investigation (DSI) was conducted to determine: (1) the extent of maintenance required as a result of using Grade 100LL or Grade 100 aviation gasoline in engines originally certificated for use with Grade 80 gasoline; and (2) the extent of availability of Grade 80 gasoline. The DSI shows: (1) that an increase in the maintenance of spark plugs and valves is required when the higher leaded fuels are used in the Avco Lycoming O-320 and the Teledyne Continental Motors O-200 engines which were certificated for use with Grade 80 gasoline; (2) that Grade 80 aviation gasoline is not available in many places in the United States; and (3) that even though Grade 80 is available in some areas not all the fuel suppliers dispense it. (Author)

AN (1) AD-A040 664/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Alaskan Air Navigation Requirements. Volume I. Overview.

DN (9) Final rept.

AU (10) Simolunas,A. A.

Quinn,G. H.

RD (11) Jan 1977

PG (12) 72 Pages

RS (14) FAA-RD-76-27-1

RC (20) Unclassified report

NO (21) See also Volume 2, Part 1, AD-A038 662 and Part 2, AD-A038 637.

DE (23) *Navigational aids, *Air traffic, *Network analysis(Management), *Aviation safety

User needs, Tacan, Range finding, Very low frequency, Distance measuring equipment, Radio beacons, Landing aids, Alaska, Radio navigation, Omega navigation, Loran

ID (25) Air taxis, Scheduled carriers, VOR

AB (27) This report describes the unique air navigation problems of the Alaskan Region. Present and future navigation aids are described relative to their applicability to this area. Conclusions as to the near term and far term feasibility of these alternatives are summarized. Recommendations for a near term solution are presented using VORTAC, NDB, and DME systems. An operational feasibility system using Differential Omega is also described for a possible far term solution. (Author)

AN (1) AD-A041 299/XAG

**FG (2) 010500
250300**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Surveillance and Data Link Enhancement Program.

DN (9) Final rept.

AU (10) Koenke,E. J.

Garot,J. M.

RD (11) Jan 1977

PG (12) 37 Pages

RS (14) FAA-EM-77-7

RC (20) Unclassified report

DE (23) *Data links, *Surveillance, *Air traffic control systems

Approach, Computer programming, Computerized simulation, Elevation, Azimuth, Range finding, Algorithms, Kalman filtering, Tracking

ID (25) Trilateration, Parametric sensitivity

AB (27) The Air Traffic Control system is moving toward more sophisticated levels of automation in an effort to increase safety and reduce system cost. National Airspace System (NAS), Automated Radar Terminal System

(ARTS), Conflict Alert, Discrete Address Beacon System (DABS) and Intermittent Positive Control (IPC) are examples of this trend. Fundamental to the success of the highly automated ATC system anticipated in the year 2000 and beyond is the ability of the system to perform automatic conflict detection and resolution. The key areas effecting this performance are surveillance system measurement accuracy and tracking capability in a variety of airspace environment and densities. This has been recognized by both the DGAC and the FAA and for this reason the following cooperative program has been developed. A variety of surveillance sensors have been postulated for air traffic control application. Among these are DABS, AGDLS, Satellite systems and combinations of sensors. These systems differ in the type of measurement, measurement accuracy and measurement rate. (Typical measurement types are range, azimuth altitude systems; range, azimuth, elevation systems; trilateration systems, etc.) Further, differences exist in expected or achieved measurement accuracy and in the frequency with which measurements are made.

AN (1) AD-A043 836/XAG

FG (2) 010500

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) Remoteness-Compensation Methodology for Benefit/Cost Establishment and Discontinuance Criteria.

DN (9) Final rept.

AU (10) Loughlin, Richard M.

RD (11) Jan 1977

PG (12) 57 Pages

RS (14) FAA-ASP-76-7

RC (20) Unclassified report

DE (23) *Terminal flight facilities, *Air traffic control systems, *Remote areas, *Cost benefits

Air transportation, Remote systems, Remote terminals, Facilities, Construction, Costs, Installation, Housing(Dwellings), Alaska, Methodology, Compensation

ID (25) Airway Planning Standard Number 1

AB (27) This report develops a procedure for adjusting the benefit/cost (B/C) ratios by which proposals for FAA terminal facilities in remote locations are evaluated. The procedure is applicable to the types of installations for which B/C analyses, based on nationwide average data, are incorporated in Airway Planning Standard Number One (FAA Order

7031.2B). Without such an adjustment, proposals for facilities in Alaska and other such locations could not realistically be compared with those for facilities in the contiguous 48 states (CONUS). The compensatory methodology first adjusts construction and installation costs according to a geographically differentiated index. Staff housing cost is subtracted. Exceptional site-preparation and other cost elements are not discarded, but their cost is made equivalent to the cost of doing the same work at a corresponding CONUS site. Next, for facilities to serve remote communities shown to be exceptionally reliant on air transportation, the ascribed benefits are adjusted upward. This benefit enhancement is proportional to the communities' aviation-dependency as determined by the model contained in this report, but it is not permitted to more than double intrinsic benefits. The benefit-enhancement premium is earned by a relatively few sites where large numbers of citizens are without alternative transportation links to the outside world for extended periods. (Author)

AN (1) AD-A046 543/XAG

FG (2) 010500

010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Terminal Area Forecast 1978-1988.

RD (11) Jan 1977

PG (12) 353 Pages

RS (14) FAA-AVP-77-17

RC (20) Unclassified report

NO (21) See also report dated Jan 76, AD-A026 753.

AL (22) Availability: Microfiche copies only.

DE (23) *Civil aviation, *Air traffic, *Management planning and control Forecasting, Airports, Air traffic control terminal areas, United States, Statistical data, Airport control towers, Terminal flight facilities, Manpower, Air traffic controllers, Regions, Geographical distribution, Commercial aviation

ID (25) Federal aviation agency

AB (27) This report contains forecasts for air carrier and air taxi enplanements, air carrier and air taxi aircraft operations, itinerant, total and instrument aircraft operations, and instrument approaches at 894 airports throughout the United States. The airports in this publication include all those with Federal Aviation Administration air traffic control towers and those with air carrier service. The report

is intended as an aid for anticipating future manpower and equipment needs at terminal areas. (Author)
23

AN (1) AD-A072 767/XAG

FG (2) 120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT SYSTEMS

TI (6) Current Aviation Statistics: Air Traffic Activity Enroute IFR Air Traffic Survey, Peak Day. Fiscal Year 1977.

RD (11) 1977

PG (12) 42 Pages

RS (14) FAA-AMS-220-79-2

RC (20) Unclassified report

DE (23) *Air traffic, *Airports, *Air transportation, *Surveys, *Statistical analysis
Records, Low altitude, Commercial aircraft, Daily occurrence, Tables(Data)

ID (25) Federal Aviation Administration

AB (27) Air Traffic facilities record daily aircraft operations under low altitude air route control. From these daily records, a facility is able to select the peak day of IFR aircraft departures. Reported are data on aircraft type, air speed, altitude origin and destination, departure time and date of peak day. Selections from these data are presented in tables on departures by ARTCC. Details of altitudes assigned are shown by both aircraft and engine groupings and also by type of user. Departure times are presented by center, by class of user and aircraft type. (Author)

AN (1) AD-A037 587/XAG

FG (2) 060400

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) Survey of Cockpit Visual Problems of Senior Pilots

AU (10) Welsh, Kenneth W.

Vaughan, John A.

Rasmussen, Paul G.

RD (11) Dec 1976

PG (12) 11 Pages

RS (14) FAA-AM-77-2

RC (20) Unclassified report

DE (23) *Human factors engineering, *Pilots, *Aging(Physiology), *Visual Perception

Instrument panels, Dark adaptation, Visual acuity, Focusing

AB (27) Fifty general aviation pilots (average age 49; range 40-73) completed a questionnaire concerning cockpit visual problems. The results of the questionnaire indicated that proper interpretation of the airspeed indicator and the altimeter required the best visual acuity (48 and 39 percent of the respondents respectively). However, 33 percent reported the attitude indicator, an instrument with relatively few numerals or markings, required optimum visual acuity. Thirty-seven percent of the pilots reported that the engine instruments, usually smaller scale, are difficult to read. Light reflected from instrument cover plates caused visual problems for 32 percent of the pilots, with most difficulty occurring during daylight hours. Forty-eight percent of the pilots reported a delay in focusing from outside the cockpit to the charts and instruments, while 6 percent reported a delay of focusing from inside to outside the cockpit. More instrument readability problems were evident while flying at night than during dusk or daylight. The effects of decreasing focusing power, altered dark adaptation, and need for more lighting are discussed with respect to the older pilot. Recommendations are made to investigate the effects of instrument lighting, vision standards, and instrument design and location with respect to the limitations of the aging visual system. (Author)

AN (1) AD-A037 906/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Air Carrier Cabin Safety. A Survey.

DN (9) Rept. for Jul-Sep 76.

RD (11) Dec 1976

PG (12) 230 Pages

RC (20) Unclassified report

DE (23) *Aircraft cabins, *Aviation safety, *Passenger aircraft Survival(Personnel), Escape systems, Smoke, Toxicity, Flight crews, Aviation accidents, Aviation injuries, Fire protection, Fire prevention, Fire resistant materials, Aircraft fires, Hazards, Surveys

ID (25) Crashworthiness, Flight attendants

AB (27) This is an overview report on the status and efficacy of the Federal Aviation Administration's air carrier cabin safety program. Up-to-date information on recurring cabin safety issues and problems was solicited from airplane manufacturers, air carriers, flight and cabin crews,

associated organizations and others. The National Transportation Safety Board provided pertinent accident data and safety recommendations developed from aircraft accident investigation. The survey identifies significant recurring cabin safety operational problems including flight attendant training and protection, flammability of cabin interiors, toxicity and smoke generation during post-crash fires, emergency evacuation, survivability. Seventeen recommendations are presented for instituting actions by the FAA's Flight Standards Service, Office of Aviation Medicine and Office of Aviation Safety to resolve recurring cabin safety problems and for continuing long-term improvement of cabin safety.

AN (1) AD-A040 065/XAG

**FG (2) 010500
050300**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
POLICY**

TI (6) Aviation Forecasts FY 1977 - 1988, Summary and Briefing Conference.

RD (11) 02 Dec 1976

PG (12) 285 Pages

RS (14) FAA-AVP-77-16

RC (20) Unclassified report

NO (21) Report on the annual Federal Aviation Administration Forecast
Conference (2nd), 2 Dec 76, Reston, Va.

DE (23) *Civil aviation, *Forecasting
Conferences, Planning, Economic analysis, Econometrics, Commercial
aviation, Air traffic, Airports

AB (27) The second annual Federal Aviation Administration Forecast Conference was held on December 2, 1976, at Reston, Virginia. This report of the proceedings includes all the formal presentations and some representative questions and answers. This Conference, like the previous one, was held for the primary purpose of (1) reemphasizing the importance of accurate data and aviation activity forecasts for Federal Aviation Administration (FAA) planning and budgetary purposes, and (2) stimulating the interchange of ideas between FAA and the aviation community. Some of the topics discussed included: growth anticipation in the general aviation and air taxi industries, aircraft financing difficulties of the airlines, long-term aviation developments. Highlights of the aviation Forecasts for Fiscal Years 1977-1988, forecasting techniques and industry analyses of completed research were also discussed. This publication includes Conference papers as well as questions and answers raised during the discussion period. (Author)

AN (1) AD-A040 474/XAG

**FG (2) 010500
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) FAA Air Traffic Activity, Calendar Year 1976.

DN (9) Semi-annual rept.

AU (10) Wilson, Patricia

RD (11) 31 Dec 1976

PG (12) 234 Pages

RC (20) Unclassified report

DE (23) *Air traffic
Instrument flight, Airports, Statistics, Tables(Data), Civil aviation,
Air space

AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), Combined Station Towers (CS/Ts), International Flight Service Stations, (IFFSSs), and Approach Control Facilities. (Author)

AN (1) AD-A046 953/XAG

**FG (2) 010500
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Airport Activity Statistics of Certificated Route Air Carriers.

DN (9) Semi-annual rept.

RD (11) 31 Dec 1976

PG (12) 309 Pages

RC (20) Unclassified report

DE (23) *Airports, *Air transportation, *Civil aviation
Air traffic, Commercial aviation, Statistical data, Tables(Data),
Passengers, Passenger aircraft, Mail, Cargo, International airports,
Data banks, Domestic, International, Takeoff, Aircraft landings,
Scheduling

AB (27) This report furnishes airport activity of the Certificated Route Air Carriers. Included in the data contained in Table 6 are passenger enplanements, tons of enplaned freight, express, and mail. Both

scheduled and non-scheduled service, and domestic and international operations are included. These data are shown by airport and carrier. Table 7 includes departures by airport, carrier and type of operation, and type of aircraft. (Author)

AN (1) AD-A054 800/XAG

FG (2) 010309

010600

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft. Calendar Year 1976.

DN (9) Annual rept.

AU (10) Moles, Charles

Wilson, Patricia

Wimbush, Violet

RD (11) 31 Dec 1976

PG (12) 390 Pages

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) *Civil aviation, *Commercial aircraft, *Census

Air traffic, Airports, Aircraft industry, Statistical data, Production, Helicopters, Pilots, Rotary wing aircraft, United States government

AB (27) This report covers statistical data, including General Aviation, Air Carrier, Aeronautical Production, Airports, detailed computer printouts for aircraft, and a Glossary of the terms used in this publication.

(Author)

23

AN (1) AD-A054 801/XAG

FG (2) 010600

050100

120300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Statistical Handbook of Aviation. Calendar Year 1976.

DN (9) Annual rept.

AU (10) Moles, Charles

Wimbush, Violet

RD (11) 31 Dec 1976

PG (12) 181 Pages

RC (20) Unclassified report

DE (23) *COMMERCIAL AVIATION, *HANDBOOKS, *STATISTICAL DATA AERONAUTICS, AIRPORTS, AIR TRAFFIC, TABLES(DATA), AVIATION SAFETY, HELICOPTERS, PILOTS, AIR TRANSPORTATION

ID (25) *Federal Aviation Administration, 1976

AB (27) This report covers statistical data, including the Federal Aviation Administration, the National Airspace System Airports, Airport Activity, U. S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, U.S. Registered Aircraft, Aeronautical Production and Exports, Aircraft Accidents, and a Glossary of the terms used in this publication. (Author)

AN (1) AD-A032 605/XAG

FG (2) 010500

010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Current Aviation Statistics. Air Traffic Activity, Fiscal Year 1976.

RD (11) Nov 1976

PG (12) 21 Pages

RC (20) Unclassified report

DE (23) *Commercial aviation, *Air traffic, *Air traffic control terminal areas, *Airport control towers Airports, Statistics

ID (25) Transatlantic flights, Domestic

AB (27) 'Current Aviation Statistics' is prepared periodically to provide a summary of current aviation statistical information. This report is prepared in the Office of Management Systems, Information and Statistics Division, Information Operations Branch. (Author)

AN (1) AD-A033 685/XAG

FG (2) 010500

120500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Model User's Manual for Airfield Capacity and Delay Models. Book 1.

DN (9) Final rept.

AU (10) Ball, Carl T.

RD (11) Nov 1976

PG (12) 305 Pages
RS (14) FAA-RD-76-128-Bk-1
RC (20) Unclassified report
DE (23) *Airports, *Computerized simulation, *Runways, *Aircraft landings, *Takeoff, *Programming manuals, *Computer programming Capacity(Quantity), Models, User needs, Planning, Delay, Separation, Commercial aircraft
AB (27) The FAA has developed a family of computer models for the analyses of the airside of an airport. These models can be used to determine the capacity and delay on airports, and to study the fine-grain sensitivity of capacity and delay to variations of airport specific conditions. This model users manual presents detailed instructions for using the FAA capacity and delay models. The manual is written primarily for airport planners and engineers who have a general familiarity with computer operations and who wish to apply these models to airport studies. (Author)

AN (1) AD-A033 889/XAG
FG (2) 061000
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE
TI (6) Physiological, Biochemical, and Multiple-Task-Performance Responses to Different Alterations of the Wake-Sleep Cycle
AU (10) Higgins,E. A.
Chiles,W. D.
McKenzie,J. M.
Funkhouser,G. E.
Burr,M. J.
RD (11) Nov 1976
PG (12) 27 Pages
RS (14) FAA-AM-76-11
RC (20) Unclassified report
DE (23) *Sleep deprivation, *Circadian rhythms, *Stress(Physiology) Performance(Human), Heart rate, Temperature, Rectum, Urine, Body temperature, Catecholamines, Fatigue(Physiology), Epinephrine, Electrolytes
AB (27) Three groups, each comprising five healthy, male, paid volunteers (ages 21 to 30), were studied for 11 days. Baseline data were collected for 3 days, during which subjects adhered to a day/night routine. On the fourth day each group took a 'flight' in the altitude chamber. Following the flight day, subjects in the first group (Group I) slept from only 0230 to 06000; subjects in the next group (Group II) had

their day extended by 6 hours and began a new routine of sleeping from 0430 to 1200 for the remainder of the study; subjects in the third group (Group III) had their day compressed by 6 hours and slept from 2030 to 2400 only that fourth night and then began a new routine of sleeping from 1630 to 2400 for the final 7 days of the study. According to the physiological and biochemical measurements, there was little difference between the two 6-hour-change groups (Groups II and III), both of which required longer rephasal times than did the group that experienced sleep loss but no time change (Group I) The psychomotor performance test indicated the greatest change in the group whose day was shortened by 6 hours (Group III). The Multiple Task Performance Battery (MTPB) indicated the greatest deficit in performance for Group III and the best postshift performance for Group II.

AN (1) AD-A034 611/XAG
FG (2) 100100
210400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) Report to Congress by the Federal Aviation Administration on the Energy Efficiency of Agency Regulations.
DN (9) Final rept.
RD (11) Nov 1976
PG (12) 133 Pages
RC (20) Unclassified report
NO (21) See also report dated Apr 76, AD-A023 765.
DE (23) *Fuel consumption, *Aircraft, *Energy consumption Energy conservation, Regulations, Flight testing, Environmental tests, Aircraft noise, Fuel systems, Flight speeds, Velocity, Airspeed, Air traffic control systems, Aircraft equipment, Crews, Qualifications
ID (25) Energy Policy and Conservation Act, Energy policy
AB (27) All regulations and laws administered by the FAA were examined for their effect on energy consumption. An inventory of regulations requiring activities which lead to fuel usage was prepared and organized. The following general groupings were identified: (1) Flight Test Programs; (2) Environmental Control; (3) Aircraft Fuel Supply; (4) Aircraft Speed and Flight Altitude; (5) Airspace and Air Traffic Control; (6) Aircraft Equipment; (7) Crewmember Qualifications.
AN (1) AD-A034 752/XAG
FG (2) 061000
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL

INST

TI (6) Stress in Air Traffic Controllers: Effects of ARTS-III

AU (10) Melton, C. E.

Smith, R. C.

McKenzie, J. M.

Hoffman, S. M.

Saldivar, J. T.

RD (11) Nov 1976

PG (12) 16 Pages

RN (18) FAA-AM-76-13

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Automation, *Stress(Physiology)

Heart rate, Anxiety, Catecholamines, Urine, Stress(Psychology)

ID (25) Automated radar terminal systems

AB (27) Physiological, biochemical, and psychological assessments of stress in air traffic controllers were made at Los Angeles (LAX) and Oakland (OAK) Terminal Radar Approach Control (TRACON) facilities before and after installation of Automated Radar Terminal Systems-III (ARTS-III). Heart rates of controllers on duty or at rest scarcely changed from before to after ARTS-III installation. Total stress increased at both TRACONS, and the increase was entirely due to elevated catecholamine excretion. Steroid excretion was significantly reduced at both facilities after ARTS-III installation. Scores on the A-State scale of the State-Trait Anxiety Inventory indicated that introduction of ARTS-III had no appreciable effect on work-related anxiety levels of controllers. The post-ARTS-III A-State means for both facilities were not significantly elevated. A-Trait was unchanged at LAX but decreased significantly at OAK. Assessments of A-State showed significant work-related increments but tended to be low.

AN (1) AD-A035 144/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) General Aviation: Aircraft, Owner and Utilization Characteristics. (1974 Data)

AU (10) Vahovich, Stephen G.

RD (11) Nov 1976

PG (12) 210 Pages

RS (14) FAA-AVP-76-9

RC (20) Unclassified report

DE (23) *Civil aviation, *Data acquisition

Aircraft, Statistical data, Classification, Utilization, Demography, Econometrics

ID (25) Ownership, Households, Income levels, General aviation aircraft

AB (27) The staff study presents and analyzes 1974 data obtained from a scientifically selected sample of general aviation (GA) aircraft owners. Statistics dealing with the distribution of the GA fleet by type of aircraft, nine primary use categories, regional representation, type of ownership, and age of aircraft are presented and discussed. Average and median family income statistics of GA aircraft owners are presented by the above criteria. The distribution of aircraft across the occupation of individual owners and the industry category for company owners is also presented. Cruising speed and avionics equipment data are analyzed across type of aircraft, primary use categories, and type of owner. Utilization statistics include mean and median total hours flown, local and itinerant flight hours, and instrument and visual hours flown. These utilization criteria are analyzed across type of aircraft, family income, primary use categories, and across regions.

AN (1) AD-A035 204/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) IFR Aircraft Handled Forecast by Air Route Traffic Control Center, Fiscal Years 1977-1988.

RD (11) Nov 1976

PG (12) 54 Pages

RS (14) FAA-AVP-76-13

RC (20) Unclassified report

DE (23) *Air traffic, *Instrument flight

Statistical data, Air traffic controllers, Air control centers, Air traffic control systems, Data bases, Geographical distribution, Planning, Budgets, Civil aviation, Military aircraft

ID (25) Federal Aviation Agency

AB (27) The report presents the forecasts of Instrument Flight Rule (IFR) aircraft handled by FAA air route traffic control centers (ARTCC). It serves as a base for the FAA planning and budget process in determining future requirements for facilities, equipment and manpower. The forecasts show that total aircraft handled will increase from 23.9 million in FY 1976 to 39.2 million in FY 1988. These national total numbers along with those for the intervening years are broken down by FAA region and by each air route traffic control center in this report.

AN (1) AD-A035 299/XAG
FG (2) 010301
010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
POLICY
TI (6) Chartbook on General Aviation: Aircraft, Owner and Utilization Characteristics.
RD (11) Nov 1976
PG (12) 43 Pages
RS (14) FAA-AVP-76-19
RC (20) Unclassified report
NO (21) See also Rept. no. FAA-AVP-76-9, AD-A035 144.
DE (23) *Aeronautics, *Civil aviation
Pilots, Charts, Operators(Personnel), Utilization, Aircraft, Flight, Surveys, Avionics, Rotary wing aircraft, Economics, Census
ID (25) *General aviation, *General aviation aircraft
AB (27) The Chartbook presents the essential summary information describing general aviation (GA) aircraft, owners and utilization characteristics derived from an analysis of 1974 data obtained from a scientifically selected sample of GA aircraft owners. (Author)

AN (1) AD-A035 677/XAG
FG (2) 050800
060400
200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) Human Response to Sound: The Calculation of Perceived Level, PLdB (Noisiness or Loudness) Directly from Physical Measures.
DN (9) Final rept.
AU (10) Higgins,Thomas H.
RD (11) 17 Nov 1976
PG (12) 46 Pages
RS (14) FAA-RD-76-1
PJ (16) FAA-202-553-001
RC (20) Unclassified report
DE (23) *Response(Biology), *Sound, *Auditory perception
Humans, Sound pressure, Frequency, Formulas(Mathematics), Calibration, Physical properties
AB (27) The relationship between the perceived level, PLdB, of sound (loudness

or noisiness) is shown to be a function of the sound pressure squared and the sound frequency squared. A logarithmic formula employing this basic relationship between perceived level and pressure and frequency has been developed and is found to be as accurate as the more complex methods currently in use. The results are found to be more accurate than the complex methods currently in use for the useful range of sound pressure levels and frequencies found to be associated with operational aircraft including helicopters, turbofan, turboprop and turbojet powered aircraft. This work, therefore, provides the systems engineer an easily understood and useful design and evaluation method. The formula developed clearly shows the design engineer and management personnel the relationship between the physical characteristics of an evolving system and its potential impact on human and community response.

AN (1) AD-A036 284/XAG
FG (2) 060500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL
INST
TI (6) Three Studies of Motion Sickness Susceptibility.
AU (10) Lentz,J. Michael
Collins,William E.
RD (11) Nov 1976
PG (12) 32 Pages
RN (18) FAA-AM-76-14
RC (20) Unclassified report
DE (23) *Motion sickness, *Personality
Vestibular apparatus, Aerospace medicine, Stress(Psychology), Behavior, Psychophysiology, Stress(Physiology), Nystagmus
AB (27) The incidence of motion sickness in a large (N = 3,618) college population was determined by means of a questionnaires. Significantly greater proportions of men than women had low susceptibility scores; significantly greater proportions of women had high susceptibility scores. Comparisons of MSQ scores were made with other self-assessments, age changes, motion experiences, familial susceptibility, use of motion sickness medication, muscular coordination, willingness to participate in motion experiments, flying experience, phobias, visual motion effects, and use of alcohol. The consistent and significant patterns of results from a variety of tests are discussed in terms of the personality characteristics that generally distinguish those highly susceptible from those nonsusceptible to motion sickness.

AN (1) AD-A036 354/XAG

FG (2) 010500

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120500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Model Users' Manual for Airfield Capacity and Delay Models. Book 2.

DN (9) Final rept.

AU (10) Ball, Carl T.

RD (11) Nov 1976

PG (12) 173 Pages

RS (14) FAA-RD-76-128-Bk-2

RC (20) Unclassified report

NO (21) See also Book 1, Ad-A033 685.

DE (23) *Runways, *Air traffic control system analysis, *Computerized
simulation

Airports, Takeoff, Delay, User needs, Computer programming, Arrival,
Taxiways, Aircraft landings, Manuals, Commercial aviation, Air
transportation

AB (27) This report contains examples for the Delay Simulation Model described
in Chapter 4 of 'Model Users' Manual for Airfield Capacity and Delay
Models' FAA-RD-76-128 Book 1, dated November 1976 (AD A033 685).
(Author)

AN (1) AD-A038 466/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL
AEROMEDICAL
INST

TI (6) The Aeromedical Significance of Sickle-Cell Trait: A Review

AU (10) McKenzie, Jess M.

RD (11) Nov 1976

PG (12) 19 Pages

RN (18) FAA-AM-76-15

RC (20) Unclassified report

DE (23) *Sickle cell anemia, *Aviation medicine

Stress(Physiology), Hypoxia, Hemoglobin, Physical fitness, Reviews

ID (25) Sickle cell trait

AB (27) This report present some of the technical background necessary for
understanding the aeromedical importance of sickle-cell disease and the

sickle-trait carrier, whose erythrocytes contain mixtures of hemoglobin
S and normal hemoglobin A. This carrier state (type AS) is not limited
to Negroes; it has been found, with lower frequency, in people
exhibiting no evidence of African inheritance. Reports of type AS
people who died suddenly, exhibiting sickle cells at necropsy, and
other reports of sickling crises in these individuals at mild
altitudes, have led some authors to conclude that airmen and air
passengers who are type AS are at considerable risk. Other reports,
particularly those based on the flying experiences of large numbers of
pilots with sickle trait, as well as on the results of experimental
exposures of type AS people to simulated altitude, indicate that
isolated instances of sudden death and altitude intolerance are
infrequent in this genotype.

AN (1) AD-A038 659/XAG

FG (2) 010500

170703

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Impact of Automation upon Air Traffic Control System
Productivity/Capacity (ARTS III).

DN (9) Final rept.

AU (10) Kuhar, William T.

Gavel, Paul

Moreland, James A.

RD (11) Nov 1976

PG (12) 39 Pages

RS (14) FAA-RD-77-39

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Air traffic controllers, *Job analysis,
*Human factors engineering

Man machine systems, Automation, Airport radar systems, Work
measurement, Capacity(Quantity), Productivity, Air traffic, Civil
aviation

AB (27) This report documents the results of a study to assess the impact of
the Automated Radar Terminal System (ARTS 3) upon air traffic control
system capacity. It is based upon on-site measurements of air traffic
activity, controller work pace, controller workload indicators, and
staffing at the San Antonio, Texas and San Francisco/Oakland,
California TRACONS. Measurements were taken of both the pre-ARTS 3 and
post-ARTS 3 environments and comparisons made to determine the

direction and degree of change attributable to ARTS 3. The results indicate that direction and degree of change attributable to ARTS 3. The results indicate that the ARTS 3 system has reduced controller workload and increased system capacity by 10.5%. A reasonable estimate of the productivity increase is 8.5%. (Author)

AN (1) AD-A056 640/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF ENVIRONMENTAL QUALITY

TI (6) Aviation Noise Abatement Policy.

RD (11) 18 Nov 1976

PG (12) 65 Pages

RS (14) FAA-EQ-78-11

RC (20) Unclassified report

DE (23) *Aircraft noise, *Noise pollution, *Pollution abatement, *Policies Airports, Legislation, United States Government, State Government, State law, Federal law

AB (27) This document sets forth agency policy for controlling noise at the source, aircraft operational procedures, and airport noise control plans. The policy sets forth the responsibilities of the FAA manufacturers, airlines, airport operators, local governments, and affected citizens who have a role in shaping the impact of aviation noise. (Author)

AN (1) AD-A032 603/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Characteristics of Medically Disqualified Airman Applicants in Calendar Years 1973 and 1974

AU (10) Dark, Shirley J.

RD (11) Oct 1976

PG (12) 15 Pages

RS (14) FAA-AM-76-10

RC (20) Unclassified report

DE (23) *Aviation personnel, *Medical examination

Epidemiology, Denial, Pilots, Statistical analysis, Pathology

ID (25) Licenses, Age distribution

AB (27) This study provides comprehensive data reflecting pertinent denial

rates with respect to the medical and general attributes of those airmen denied medical certification in calendar years 1973 and 1974. The study provides such descriptive epidemiologic data as age, sex, occupation, class of certificate applied for, total flying time, and cause-specific annual denial rates for medically disqualified applicants. Eighty-three percent of all denied applicants indicated nonaeronautical occupations. Fifty-three percent indicated less than 40 hours total flying time. The most significant causes for denial (regardless of class applied for) were cardiovascular, the miscellaneous pathology category, neuropsychiatric, and at a substantially lower level, eye pathology.

AN (1) AD-A033 331/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Some Effects of Sleep Deprivation on Tracking Performance in Static and Dynamic Environments

AU (10) Collins, William E.

RD (11) Oct 1976

PG (12) 12 Pages

RS (14) FAA-AM-76-12

RC (20) Unclassified report

DE (23) *Sleep deprivation, *Performance(Human)

Vestibular apparatus, Tracking, Attention, Motor reactions, Perception(Psychology), Aviation personnel, Drugs, Amphetamines

ID (25) Information processing(Psychology)

AB (27) The influence of approximately 34 and 55 h of sleep deprivation on performance scores derived from manually tracking the localizer needle on an aircraft instrument was assessed under both static (no motion) and dynamic (whole-body angular acceleration) laboratory conditions. In each of two experiments, 20 young men were equally divided into groups of control and sleep-deprived subjects. All tests were conducted in an enclosed Stille-Werner rotator in total darkness with the exception of the illuminated tracking display. In both experiments, significant decrements in dynamic tracking performance were uniformly obtained after 24 h and more of sleep loss. Static tracking scores were also impaired but less consistently so. In Experiment II, administration of d-amphetamine after 53 h of sleep loss produced a sharp drop in error for both static and dynamic tracking. Although performance at both types of tasks remained poorer for sleep-deprived subjects, their static tracking scores did not differ significantly from control

subjects 2 h after drug ingestion.

AN (1) AD-A034 195/XAG

**FG (2) 010600
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

**TI (6) SRDS Technical Program Document, Fiscal Year 1977 Engineering and
Development Approved Programs.**

RD (11) Oct 1976

PG (12) 149 Pages

RC (20) Unclassified report

NO (21) See also report dated Jul 75, AD-A011 088.

**DE (23) *Air traffic control systems, *Air transportation, *Civil aviation
Systems engineering, Radar, Radar beacons, Navigation, Communication
and radio systems, Landing aids, Aviation safety, Weather, Airports,
Planning**

**AB (27) The report contains Research and Technology Resumes which reflect
Systems Research and Development Service, Federal Aviation
Administration, approved subprograms. These resumes identify the
technical objective, approach, milestones scheduled for accomplishment,
end-item products, and FY-76 accomplishments, and source of
requirements.**

AN (1) AD-A036 055/XAG

**FG (2) 010305
120500**

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA
AERONAUTICAL CENTER**

**TI (6) Emergency Evacuation Computer Simulation - Program Description and
User's Guide.**

DN (9) Interim rept. Jun 74-Aug 76

AU (10) Gillespie, James

RD (11) Oct 1976

PG (12) 80 Pages

RS (14) FAA-216-76A

RC (20) Unclassified report

DE (23) *Transport aircraft, *Evacuation, *Computerized simulation

**Air transportation, Civil aviation, Emergencies, Passengers,
Probability distribution functions, Time, Computer programs, Fortran,
Subroutines**

**AB (27) A computer model has been developed that simulated emergency evacuation
in transport category aircraft. Two computer programs are available
that model wide and narrow body aircraft. The computer model is
statistical in that a gamma function is assumed to obtain a probability
distribution for time path segments of a passenger during evacuation.
The program has been successfully run on a IBM 370/155 computer.
Running time is dependent on the number of passengers and number of
simulations run. Running time is approximately one minute for five
evacuations of a 80 passenger narrow body aircraft. For 100 evacuations
of a 389 passenger wide body aircraft running time is approximately 90
minutes. (Author)**

AN (1) AD-A031 150/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

**TI (6) Technical Progress in the U.S. Development of a Microwave Landing
System.**

DN (9) Progress rept. Jul 71-Jun 74.

RD (11) Sep 1976

PG (12) 223 Pages

RS (14) FAA-RD-74-187

RC (20) Unclassified report

**NO (21) Sponsored in part by Department of Defense, Washington, D.C. and
National Aeronautics and Space Administration, Washington, D.C. See
also report dated Jul 71, AD-733 268.**

DE (23) *Microwave landing systems

Systems approach, Systems engineering

**AB (27) The document reports the technical progress that has been made from
July 1971 to July 1974 in the U.S. development of a Microwave Landing
System. This MLS development is a joint DOT/DOD/NASA effort based upon
the National Plan for Development of the Microwave Landing System,
dated July 1971. Phase I Technique Analysis and Contract Definition has
been completed. Phase II, Feasibility Demonstration is nearing
completion. The next step is an evaluation and the selection of an MLS
technique and optimum signal format to allow the start of Phase III,
Prototype Development.**

AN (1) AD-A031 165/XAG

**FG (2) 010500
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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Central Flow Control Computer Program Specifications. Volume I.
Introduction to Specification Series; System Overview.

DN (9) Final rept.

AU (10) Bales,R.

Beeker,G.
Broglio,C.
Casey,F.
Chao,Y.

RD (11) Sep 1976

PG (12) 27 Pages

RS (14) FAA-RD-76-157-Vol-1

RC (20) Unclassified report

NO (21) See also Volume 3, AD-A031 180.

DE (23) *Air traffic control systems, *Computerized simulation, *Computer
programs

Air traffic, Centralized, Flow, Automation, Airports, Delay,
Interfaces, Predictions, Control, Specifications, On line systems,
Telecommunication, Aviation safety, Commercial aviation, Real time

ID (25) *Airport delay prediction, Central flow control computer program

AB (27) This report contains an introduction to the specifications for the
Central Flow Control Computer Program, and presents an overview of the
automated system on which the program functions. This report provides a
description of the system application, the data processing
configuration, program interfaces, system operations, software
capabilities, and the remainder of the specification series. (Author)

AN (1) AD-A031 167/XAG

FG (2) 010500

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Central Flow Control Computer Program Specifications. Volume V.
Executive Subsystem Specification.

DN (9) Final rept.

AU (10) Bales,R.

Beeker,G.
Broglio,C.
Casey,F.
Chao,Y.

RD (11) Sep 1976

PG (12) 47 Pages

RS (14) FAA-RD-76-157-Vol-5

RC (20) Unclassified report

NO (21) See also Volume 4, AD-A031 210.

DE (23) *Air traffic control systems, *Computer programs

Air traffic, Centralized, Flow, Control, Executive control programs,
Monitors, Specifications, Error analysis, Aviation safety, Commercial
aviation

ID (25) Central Flow Control Computer Program

AB (27) This report contains the specifications for the executive subsystems of
the Central Flow Control Computer Program. This report provides a
detailed functional specification of the system's resource management,
error analysis, reconfiguration, startup and startover, system analysis
recording, input/output message, testing, and supervisor call
components. (Author)

AN (1) AD-A031 180/XAG

FG (2) 010500

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Central Flow Control Computer Program Specifications. Volume III.
Off-Line Support Subsystem Specification.

DN (9) Final rept.

AU (10) Bales,R.

Beeker,G.
Broglio,C.
Casey,F.
Chao,Y.

RD (11) Sep 1976

PG (12) 82 Pages

RS (14) FAA-RD-76-157-Vol-3

RC (20) Unclassified report

NO (21) See also Volume 4, AD-A031 210.

DE (23) *Air traffic control systems, *Computer programs

Air traffic, Centralized, Flow, Off line systems, Logistics support,
Data bases, Recording systems, Data acquisition, Data processing,
Control, Aviation safety, Commercial aviation

ID (25) Central Flow Control Computer Program

AB (27) This report contains the specifications for the off-line support subsystem of the Central Flow Control Computer Program. This report provides a detailed functional specification of the utility, data recording and analysis, data base support, system build, system test, and management aid software components of the system. (Author)

AN (1) AD-A031 210/XAG

FG (2) 010500

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CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Central Flow Control Computer Program Specifications. Volume IV. Data Base Subsystem Specifications.

DN (9) Final rept.

AU (10) Bales,R.

Beeker,G.

Broglio,C.

Casey,F.

Chao,Y.

RD (11) Sep 1976

PG (12) 73 Pages

RS (14) FAA-RD-76-157-Vol-4

RC (20) Unclassified report

NO (21) See also Volume 5, AD-A031 167.

DE (23) *Air traffic control systems, *Computer programs

Air traffic, Flow, Control, Data bases, Data management,

Files(Records), Functions, Specifications, Logic, Commercial aviation,

Directories, Aviation safety, Centralized

ID (25) Official airline guides, Central Flow Control Computer Program

AB (27) This report contains the specifications for the data base subsystem of the Central Flow Control Computer Program. This report provides a detailed functional specification of the system's data base management components, and a detailed specification of the data base structure. (Author)

AN (1) AD-A031 345/XAG

FG (2) 120500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Central Flow Control Computer Program Specifications: Volume II. Application Program Specification.

DN (9) Final rept.

RD (11) Sep 1976

PG (12) 439 Pages

RS (14) FAA-RD-76-157-2

PJ (16) FAA-111-102

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A031 165. Report of the Central Flow Control Design Team.

DE (23) *Air traffic control systems, *Computer applications, *Computer programming
Specifications, Instruction manuals, Data bases, Flight paths

AB (27) This report contains the specifications for the applications programs of the Central Flow Control Computer Program. This report provides a detailed requirements definition and functional specification for each system transaction. The transaction purpose, input data, processing functions, and output are defined and specified in detail.

AN (1) AD-A032 259/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) 1975 General Aviation Activity Survey.

DN (9) Summary rept.

AU (10) Huang,Shung-Chai

RD (11) Sep 1976

PG (12) 70 Pages

RC (20) Unclassified report

DE (23) *Air transportation, *Commercial aviation, *Surveys

Pilots, Airports, Air traffic, Fuel consumption, Civil aviation, Aeronautics, Statistical data, Daily occurrence, Management planning and control, Passenger aircraft, Commercial aircraft

AB (27) The Federal Aviation Administration and the Civil Air Patrol conducted this general aviation activity survey as a joint effort on August 23 and 26, 1975. The survey produced a comprehensive data base. It is

useful in describing general aviation aircraft and pilot profiles, in examining the relationship between aircraft use, ownership, pilot certificate, pilot age and activity and in estimating airport traffic as well as fuel consumption. (Author)

AN (1) AD-A032 354/XAG

FG (2) 010309

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C ASSOCIATE ADMR FOR AIR

TRAFFIC AND AIRWAY FACILITIES

TI (6) Consultative Planning Conference on Aircraft Separation Assurance: Presentations.

RD (11) 27 Sep 1976

PG (12) 150 Pages

RS (14) FAA-AFT-4-76-1

PJ (16) FAA-054-241

RC (20) Unclassified report

DE (23) *Commercial aircraft, *Collision avoidance, *Meetings

Airborne warning and control system, Avionics, Ground to air communications, Air traffic control systems, Civil aviation, Transponders, Coders

ID (25) *Midair collisions

AB (27) This document contains the vu-graphs presented at the Consultative Planning Conference of September 27, 1976 on the FAA's Aircraft Separation Assurance Program. The purpose of this conference was to inform and solicit comments from the aviation user groups on the FAA's proposed Aircraft Separation Assurance Program. The first section includes a review and analyses of pertinent statistical information on collisions and collision analyses, major separation assurance objectives, protection priorities, and methods of achieving objectives. The second section, Existing Air Traffic Control System, reviews the procedures and systems being used today related to aircraft separation. The third section, Developmental Approaches, contains information on conflict alert in the terminal environment, Collision Avoidance Systems (CAS) including Airborne CAS (ACAS) and Beacon-Based CAS (BCAS), Intermittent Positive Control (IPC) and Proximity Warning Indicator (PWI) systems. In Comparison of Overlapping Development Programs, the fourth section, information is given concerning FAA's selection of BCAS and IPC as the programs to pursue as well as FAA's decision not to proceed with ACAS and PWI. The final section, the recommended five-point Aircraft Separation Assurance Program, includes the plans, proposed schedules, interrelationships with other programs, cost and

present status of (1) conflict alert in the terminal environment, (2) IFR flight Plan requirements (3) transponders and encoding altimeters, (4) BCAS, and (5) IPC.

AN (1) AD-A032 464/XAG

FG (2) 120500

120600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) A Compendium of NAS EnRoute System Performance, Analysis, and Modeling Documentation Relative to the Model A3d2 EnRoute Operational System.

DN (9) Final rept. Jan 69-Jun 76

AU (10) Ohman,Mae

Irwin,Robert F.

RD (11) Sep 1976

PG (12) 44 Pages

RS (14) FAA-RD-76-175

PJ (16) FAA-122-109-08A

RC (20) Unclassified report

DE (23) *Air traffic control system analysis, *Computer applications
Computer programming, Data processing equipment, Radar, Computer architecture, Mathematical models

ID (25) Performance evaluation

AB (27) The documents identified in this compendium may be in the form of Design Concepts. Design Specifications, Performance Memorandums or Reports, or the response to FAA requested studies that may, or may not have been implemented into the EnRoute Model A3d2 Operational Software Program.

AN (1) AD-A032 476/XAG

FG (2) 090700

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Grounding, Bonding and Shielding Bibliography 1971 to 1975.

DN (9) Final rept.

RD (11) Sep 1976

PG (12) 46 Pages

RS (14) FAA-RD-76-177

RC (20) Unclassified report

DE (23) *Electrical grounding, *Electromagnetic shielding, *Bibliographies

Shielding, Lightning arresters, Ground(Electrical), Transmission lines
AB (27) As a result of a literature search carried out in conjunction with an extensive effort concerning grounding, bonding and shielding, a bibliography was compiled. The bibliography, covering the period 1971 to 1975 is contained in this report. A bibliography covering the period 1930 to 1971 was published as a separate report, FAA-RD-76-145.

AN (1) AD-A032 728/XAG

**FG (2) 010500
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**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
POLICY**

TI (6) Aviation Forecasts - Fiscal Years 1977 - 1988.

RD (11) Sep 1976

PG (12) 108 Pages

RS (14) FAA-AVP-76-17

RC (20) Unclassified report

DE (23) *Commercial aviation, *Air transportation, *Air traffic

Air traffic control terminal areas, Airport control towers, Federal budgets, Routing, Scheduling, Forecasting, Cargo aircraft

ID (25) Federal Aviation Administration, Air carriers

AB (27) This report contains the latest Federal Aviation Administration forecast of measures of workload and activity at towered airports, air route traffic control centers, and flight service stations for Fiscal Years 1977 to 1988. The forecasts were made for the four major users of the system; air carriers, air taxi, general aviation and the military. The report has been prepared to meet the budget and planning needs of the various offices and services of FAA for data concerning future trends in aviation activity.

AN (1) AD-A040 060/XAG

**FG (2) 050300
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND
DEVELOPMENT SERVICE**

TI (6) Central Flow Control Automation Program Cost-Benefit Analysis.

DN (9) Final rept.

AU (10) Broglio, Carlo J.

Hannan, Thomas L.

RD (11) Sep 1976

PG (12) 54 Pages

RS (14) FAA/RD-77/53

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Cost analysis

Automation, Cost benefits, Air traffic, Energy consumption, Air pollution, Airports, Aircraft noise, Life cycle costs

AB (27) This report contains an analysis of the benefits and costs associated with the Central Flow Control Automation Program. It presents the projected benefits and costs of both the current system and proposed system in terms of present-value dollars. Resultant benefit and cost differentials are discussed in terms of net present value and benefit-to-cost ratio. The sensitivity of these measures to major program uncertainty is described. (Author)

AN (1) AD-A051 173/XAG

**FG (2) 010309
010500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Commuter Air Carrier Operators as of September 1976.

DN (9) Annual rept.

AU (10) Thompson, George E.

RD (11) 30 Sep 1976

PG (12) 45 Pages

RC (20) Unclassified report

DE (23) *Commercial aviation, *Air traffic

Civil aviation, Air transportation, Passenger aircraft, Flight, Scheduling, Cargo, Routing

ID (25) *Commuter air carriers

AB (27) This report presents data received from commuter air carrier operators who reported activity data to the Civil Aeronautics Board during the quarter ending September 30, 1976. Tables have been prepared from extractions reported on CAB Form 298-C (Schedule A-1) Report of Aircraft Operated, and CAB Form 298-C (Schedule T-2) Report of Flights Operated. (Author)

AN (1) AD-A110 348/XAG

**FG (2) 010600
050300**

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semi-annual rept. no. 4, 1 Jan-30 Jun 76.

RD (11) 20 Sep 1976

PG (12) 39 Pages

RS (14) FAA-ACS-82-4

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Civil aviation, *Security, *Crimes

Transport aircraft, Bombs, Threats, Sabotage, Crisis management, Strategy, Training, Security personnel, Law enforcement, Threat evaluation, Inspection, Passengers, Detection, Weapons, Explosives detection, Regulations, Aviation safety, Operational effectiveness

ID (25) Hijacking

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A029 659/XAG

FG (2) 010300

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Military Aviation Forecasts Fiscal Years 1977-1988.

RD (11) Aug 1976

PG (12) 27 Pages

RS (14) FAA-AVP-76-15

RC (20) Unclassified report

DE (23) *Military aircraft, *Air traffic

United States, Air transportation, Forecasting, Terminal flight facilities, Landing fields, Civil aviation, Inflight, Time, Military procurement

ID (25) Federal Aviation Administration

AB (27) This report presents forecasts of military air traffic activity at facilities operated by the Federal Aviation Administration for fiscal years 1977 through 1988. These data are required for proper planning to meet the demands which the United States military services will place on the National Aviation System. The report is used as a guide in determining the need for larger or additional FAA facilities, for

changes or consolidations, and for increases or decreases in personnel at existing facilities. Data on number of active military aircraft and hours flown were supplied by the office of Secretary of Defense. Data covers the period fiscal years 1977-1983 for the three military services. Because detailed planning data beyond this timeframe were not available from the Department of Defense, the 1983 levels were extended forward for general planning guidance for 1984-1988. The federal Government's fiscal year changed to October 1- September 30 beginning in 1976 as part of the new law revamping the entire budgetary process. This is one of a series of specialized forecast studies issued annually by the FAA Aviation Forecast Branch, Office of Aviation Policy. Suggestions and comments on the scope and content of this report are requested and will be given careful consideration in planning future editions. (Author)

AN (1) AD-A030 150/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) FAA Category III Instrument Landing System: A Ground Equipment Development Overview.

DN (9) Final rept.

AU (10) Peterson, Carl G.

RD (11) Aug 1976

PG (12) 81 Pages

RS (14) FAA-RD-75-107

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS

RELIABILITY(ELECTRONICS), MONITORS, SYSTEMS ENGINEERING, ELECTRONIC

EQUIPMENT

ID (25) *Instrument landing systems, AN/GRN-27

AB (27) Federal Aviation Administration, Systems Research and Development Service VHF/UHF Category III Instrument Landing System development efforts have resulted in the establishment of operational Category IIIA ILS at various airports in the United States. Significant efforts and results are summarized. Major differences between the FAA MARK III ILS and other types of ILS are pointed out. Reliability aspects, the Far Field Monitor, the Maintenance Monitor and the ILS Monitor Precision Calibrator as part of the Category III ILS development are presented. Existing lightning problems and efforts to resolve these are covered. Report serves to provide a broad single picture of SRDS interrelated

Category III ILS development activities to date.

AN (1) AD-A030 337/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) A Comparison of Air Radionavigation Systems (For Helicopters in Off-Shore Areas).

DN (9) Final rept.

AU (10) Quinn, George H.

RD (11) Aug 1976

PG (12) 20 Pages

RS (14) FAA-RD-76-146

RC (20) Unclassified report

DE (23) *RADIO NAVIGATION, *DOPPLER NAVIGATION, *INERTIAL NAVIGATION, *NAVIGATIONAL AIDS
HELICOPTERS, OFFSHORE, FLIGHT PATHS, OMEGA NAVIGATION, VERY LOW FREQUENCY, LORAN, OMNIDIRECTIONAL, TACAN, DISTANCE MEASURING EQUIPMENT,

GLOBAL POSITIONING SYSTEM, NAVIGATION SATELLITES, RADIO BEACONS

ID (25) Loran C

AB (27) This paper examines the technical potential of ten navigation systems that may meet specific IFR en route navigation requirements for helicopters operating in off-shore areas. Technical factors considered essential for navigation are: (1) operational range, (2) operational altitude, (3) accuracy, and (4) reliability. Not addressed in this paper are such operational factors as pilot workload, number of way points, type of display, etc. Estimated user equipment cost will be included because of its importance in system selection. (Author)

AN (1) AD-A032 497/XAG

FG (2) 010400

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) An Overview of Enroute Radio Navigation Services for Civil Aviation.

DN (9) Final rept.

AU (10) Yulo, Carlo

RD (11) Aug 1976

PG (12) 21 Pages

RS (14) FAA-RD-76-187

RC (20) Unclassified report

DE (23) *Radio navigation, *Civil aviation, *Loran, *Omega navigation
Distance measuring equipment, Very low frequency, TACAN, Global positioning system

ID (25) Navstar, Loran-C

AB (27) This report presents (1) an overview of radio aids to navigation for civil aviation, and (2) outlines engineering and development efforts that would be responsive both to the needs of the aviation community and to the budgetary concerns of Congress. (Author)

AN (1) AD-A032 558/XAG

FG (2) 240700

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Aviation Medicine

AU (10) Reighard, H. L.

RD (11) Aug 1976

PG (12) 15 Pages

RS (14) FAA-AM-76-8

RC (20) Unclassified report

DE (23) *Aviation medicine, *Civil aviation

Physical fitness, Occupational diseases, Standards, Aviation accidents, Medical examination, Industrial hygiene, Pilots

AB (27) Review and status of civil aviation medicine. (Author)

AN (1) AD-A029 162/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) A Crashworthiness Analysis with Emphasis on the Fire Hazard: U.S. and Selected Foreign Turbine Aircraft Accidents, 1964-1974.

DN (9) Final rept.

AU (10) Horeff, Thomas G.

RD (11) Jul 1976

PG (12) 167 Pages

RS (14) FAA-RD-75-156

RC (20) Unclassified report

DE (23) *Aviation accidents, *Aircraft fires, *Jet transport planes, *Passenger aircraft, *Commercial aircraft, *Aviation safety

Firefighting vehicles, Survival(General), Airports, Tables(Data), Death, Bibliographies, Fuel tanks, Jet engine fuels, Explosions, Inert materials, Fire prevention, Aviation injuries, Fire protection, Fire suppression, Rescues, Evacuation, Impact, Escape systems

ID (25) *Crashworthiness

AB (27) An analysis of 382 impact-survivable/substantial damage turbine aircraft accidents and incidents which occurred during the 11-year period from 1964 through 1974 was performed as part of an overall study of the interrelationship of aircraft crashworthiness and airport crash fire-rescue services. The analysis included 343 accidents and incidents which occurred in the U.S. and 39 outside the U.S. Crashworthiness data were obtained from accidents both in and outside the U.S. The U. S. accidents also provided data for an airport crash fire-rescue service analysis. The crashworthiness analysis indicated that 94.9 percent of the fatalities in world-wide U.S. air carrier impact-survivable accidents resulted from accidents where fire occurred. Fire and its effects were estimated to be the cause of: (1) forty percent of the fatalities; (2) fatal injuries to 23.3 percent of the occupants in survivable/fatal accidents; and (3) a reduction in survivability, from 65.2 percent to 41.9 percent, of the occupants in survivable/fatal accidents. The status of FAA crashworthiness R and D programs directed toward the development of aircraft fire protective measures is described to focus on efforts being taken to reduce the fire hazard. (Author)

AN (1) AD-A030 172/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION DES PLAINES ILL GREAT LAKES REGION

TI (6) O'Hare Delay Task Force Study. Volume 2. Technical Report.

DN (9) Technical rept. Dec 74-Jun 76.

RD (11) Jul 1976

PG (12) 232 Pages

RS (14) FAA-AGL-76-1-Vol-2

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A030 237.

DE (23) *Air traffic control systems, *Landing fields, *Scheduling Takeoff, Delay, Separation, Cost analysis, Aviation fuels, Manhours, Flight crews, Air traffic, Visual flight rules, Aviation safety

ID (25) O'Hare International Airport

AB (27) This joint FAA/City of Chicago/Airline study of air traffic delay at Chicago O'Hare International Airport is presented in three volumes. The first volume is an executive summary of the study findings and

recommendations. The second volume is the technical report, covering the findings, conclusions and documentation of the data and methodology utilized in the study. The third volume consists of appendices which contain data and explanatory materials. This study of air traffic delay at Chicago O'Hare International Airport, its causes and potential solutions outlines a comprehensive program of delay reduction measures that have the potential to dramatically reduce the level and cost of delay. The study also quantifies benefits of elements of the upgraded third generation air traffic control system.

AN (1) AD-A030 237/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION DES PLAINES ILL GREAT LAKES REGION

TI (6) Delay Task Force Study. Volume I. Executive Summary.

DN (9) Final rept. Dec 74-Jun 76.

RD (11) Jul 1976

PG (12) 30 Pages

RS (14) FAA-AGL-76-1-Vol-1

RC (20) Unclassified report

NO (21) See also Volume 2, AD-030 172.

DE (23) *Air traffic control systems, *Landing fields

Aviation safety, Scheduling, Delay, Takeoff, Separation, Cost analysis, Aviation fuels, Manhours, Flight crews, Air traffic, Visual flight rules

ID (25) O'Hare International Airport

AB (27) This study of air traffic delay at Chicago O'Hare International Airport, it causes and potential solutions has identified no panacea to the problem in the present or future. However, the study does outline a comprehensive program of delay reduction measures which if implemented, has the potential to dramatically reduce the current level and costs of delay. The program will also provide significant future delay reduction benefits regardless of the future air traffic control environment. The potential cost savings outlined are not intended to represent absolutes but rather to point out the most productive directions in which to focus industry action. During the study, several of the delay reduction concepts identified by the Task Force have been tested by the study sponsors with results which parallel those identified in the Task Force evaluations, lending additional credence to the concepts. This publication is a summary version of the final Task Force report which is comprised of three volumes: this Executive Summary, a Technical Report detailing the analyses which led to the recommendations, and a volume of Technical Appendices containing the data and the methodology

used in this study.

AN (1) AD-A030 305/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION DES PLAINES ILL GREAT LAKES REGION

TI (6) O'Hare Delay Task Force Study. Volume III. Technical Appendices.

RD (11) Jul 1976

PG (12) 181 Pages

RS (14) FAA-AGL-76-1-Vol-3

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A030 237.

DE (23) *Air traffic control systems, *Landing fields, *Scheduling,

*Computerized simulation

Delay, Takeoff, Cost analysis, Traffic, Capacity(Quantity), Queueing theory, Runways

ID (25) O'Hare international airport, Airsim computer program, Gatesim computer program, Throughput

AB (27) This joint FAA/City of Chicago/airline study of air traffic delay at Chicago O'Hare International Airport is presented in three volumes. The first volume is an executive summary of the study findings and recommendations. The second volume is the technical report, covering the findings, conclusions and documentation of the data and methodology utilized in the study. The third volume consists of appendices which contain data and explanatory materials. This study of air traffic delay at Chicago O'Hare International Airport, its causes and potential solutions outlines a comprehensive program of delay reduction measures that have the potential to dramatically reduce the level and cost of delay. The study also quantifies benefits of elements of the upgraded third generation air traffic control system. (Author)

AN (1) AD-A031 099/XAG

FG (2) 040200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Collocated Flight Service Station/Air Route Traffic Control Center Aviation Weather Unit.

DN (9) Final rept. on Task 1

AU (10) Wuebker,L. J.

Spring,E.

Mandel,E.

Langston,J.

Blake,F.

RD (11) Jul 1976

PG (12) 74 Pages

RS (14) FAA-RD-76-152

RC (20) Unclassified report

DE (23) *Weather stations

Weather communications, Weather forecasting, Air transportation, Air traffic control systems, Site selection, Systems analysis

ID (25) Flight service stations

AB (27) A comprehensive study and analysis was performed to determine optimum weather and aeronautical data collection, forecasting, and dissemination methodologies for a collocated Flight Service Station and Air Route Traffic Control Center environment. Special emphasis was placed on a centralized weather unit that would improve weather services to all facets of the aviation community as a result of collocating a Flight Service Station with an Air Route Traffic Control Center.

AN (1) AD-A037 547/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Development and Evaluation of Masterbody Forms for 3- and 6-Year-Old-Child Dummies

AU (10) Young,Joseph W.

Reynolds,Herbert M.

McConville,John T.

Snyder,Richard G.

Chandler,Richard F.

RD (11) Jul 1976

PG (12) 43 Pages

RS (14) FAA-AM-76-9

RC (20) Unclassified report

DE (23) *Anthropometry

Children, Sizes(Dimensions), Mathematical models, Molds(Forms), Mass, Clay

ID (25) *Dummies(Human)

AB (27) This study defines and evaluates the size, shape, and mass distribution characteristics of masterbody forms representative of 3-year-old and 6-year-old U.S. children. Based on the author's collective judgment of

available data, 98 anthropometric dimensions were selected and used to develop full-scale clay masterbody forms for reproduction in casting stone. The stone models were segmented into 10 primary body components representing the head, neck, upper torso, lower torso, upper arm, lower arm, hand, upper leg, lower leg, and foot. Weight, volume, center of mass, and mass moments of inertia measured on each body segment are presented in this report. (Author)

AN (1) AD-A043 784/XAG

FG (2) 010400

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) Establishment Criteria for Category II Instrument Landing System (ILS).

DN (9) Final rept.

AU (10) Zaidman,S.

RD (11) Jul 1976

PG (12) 52 Pages

RS (14) FAA-ASP-76-1

RC (20) Unclassified report

DE (23) *Flight instruments, *Instrument landings, *Approach lights

Cost benefits, cost analysis, Aviation safety, All weather aviation, Air traffic, Civil aviation, Instrument flight, Landing lights, Installation, Marker lights, Glide slope, Runways, Landing aids, Beacon lights

ID (25) Instrument landing system

AB (27) This report develops revised establishment criteria for the Category II Instrument Landing System (ILS) with approach lights based upon benefit/cost analysis. Revised criteria require 2,500 or more annual instrument approaches by certificated route air carrier aircraft. An existing Category II ILS at an airport recording fewer than 1,000 certificated route air carrier annual instrument approaches meets discontinuance criteria. Benefits of an ILS include reduction of flight disruptions--delays, diversions, and cancellations due to lowered published approach and landing minimums--and safety, the reduced probability of approach accidents. The primary impact of the criteria is to discourage future Category II ILS establishment at airports not served by trunk air carriers. In the short term, it is estimated that 25 airports now without a commissioned Category II ILS will qualify for a facility. Beyond the present time frame, only six additional airports are expected to qualify over the following ten years. (Author)

AN (1) AD-A025 741/XAG

FG (2) 010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Current Aviation Statistics. Air Traffic Activity. Enroute IFR Air Traffic Survey Peak Day - Fiscal Year 1975.

RD (11) Jun 1976

PG (12) 122 Pages

RC (20) Unclassified report

NO (21) See also Report dated Feb 76, AD-A020 550.

DE (23) *Air traffic, *Air control centers

Civil aviation, Airports, Statistical data, Peak values, Regulations, Instrument flight, Military aircraft, Tables(Data), Low altitude, Airspeed, Time dependence, Altitude, Allocations, Variations, Air traffic control systems

AB (27) Air Traffic facilities record daily aircraft operations under low altitude air route control. From these daily records, a facility is able to select the peak day of IFR aircraft handled. Reported are data on aircraft type, air speed, altitude, origin and destination, departure time and date of peak day. Selections from these data are presented in tables on departures by ARTCC and towers. Details of altitudes assigned are shown by both aircraft and engine groupings and also type of user. Departure times are presented by center, by class of user and aircraft type.

AN (1) AD-A029 431/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Accident Experience of Civilian Pilots with Static Physical Defects.

AU (10) Dille,J. Robert

Booze,Charles F.

RD (11) Jun 1976

PG (12) 12 Pages

RS (14) FAA-AM-76-7

RC (20) Unclassified report

DE (23) *Aviation accidents, *Handicapped persons, *Physical fitness

Civil aviation, Pilots, Aviation safety, Visual perception, Blindness, Color vision, Performance(Human)

AB (27) The U.S. Federal Aviation Administration (FAA) is committed to

establishment of airman physical standards and certification policies that are as liberal as possible without compromising aviation safety. Through the years, medical flight test results, research, and consultant opinions have resulted in relaxation of medical standards and policies and current FAA certification of 4,704 pilots with blindness or absence of one eye, 14,421 who wear contact lenses, 15,779 with deficient color vision, 15,543 with deficient distant vision and smaller, but significant, numbers with paraplegia, deafness, and amputations. Limitations are placed on flying activities when appropriate. Routine aircraft accident investigations seek to determine the presence of physical problems in the involved airmen and any probable association of the defect with the accident cause. Three categories exceeded expectations significantly: blindness or absence of one eye, deficient color vision with a waiver, and deficient distant vision. However, these groups reported much higher median flight times than a non-accident airman population and accident airmen without any of the pathology selected for this study. Analyses of available data proved inconclusive but increased exposure may account for most or all of the increased accidents observed for airmen with these three pathologies.

- AN (1) AD-A031 880/XAG**
FG (2) 050600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Education as a Factor in the Selection of Air Traffic Controller Trainees
AU (10) Cobb, Bart B.
Young, Carol L.
Rizzuti, Barbara L.
RD (11) Jun 1976
PG (12) 38 Pages
RS (14) FAA-AM-76-6
RC (20) Unclassified report
DE (23) *Air traffic controllers, *Personnel selection, *Education Training, Predictions, Job analysis, Personnel retention, Courses(Education), Careers, Attrition
AB (27) This longitudinal study of 2,352 air traffic control specialist recruits (1,858 En Route and 494 Terminal) who entered the FAA Academy basic training phase in 1969 examined the validity of educational level, recency of education, and major areas of college study for the prediction of success in air traffic control (ATC) training. All

educational variables, both before and after consideration of age effects and pre-FAA experience, were found to be negligibly and/or inversely related to ATC success. College majors listed by 925 of the 1,265 recruits who attended college revealed little potential for prediction of ATC success; even those 53 recruits whose majors were judged to be aviation related had a retention rate of only 56.6 percent compared to the 56.7 percent retention rate of all recruits indicating college work. None of the education variables had a significant interaction effect on the validities of other selection factors. Moreover, all types of aviation-related experience except ATC were found to be unreliable for prediction of training outcomes.

- AN (1) AD-A032 260/XAG**
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS
TI (6) FAA Air Traffic Activity, Fiscal Year 1976.
DN (9) Semi-annual rept.
AU (10) Thompson, George
Wilson, Patricia
RD (11) 30 Jun 1976
PG (12) 251 Pages
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Air traffic control terminal areas, *Air traffic Routing, Landing fields, Pilots, Aircraft landings
ID (25) *Air traffic activity, FAA(Federal aviation administration), Federal aviation administration, Aircraft operations, *Instrument flight rules, *Air routes, Pilots briefing
AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), Combined Station Towers (CS/Ts), International Flight Service Stations (IFSSs), and Approach Control Facilities. (Author)
- AN (1) AD-A036 893/XAG**
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
POLICY

TI (6) Satellite Airports: Analysis of Development Potential.

DN (9) Final rept.

AU (10) Fromme,William R.

RD (11) Jun 1976

PG (12) 154 Pages

RS (14) FAA-AVP-77-6

RC (20) Unclassified report

DE (23) *Airports, *Commercial aviation

Decentralization, Air traffic control systems, Planning, Marketing, Cost effectiveness, Capacity(Quantity), Congestion, Utilization, Urban areas

ID (25) Satellite airports

AB (27) This report provides an analysis of the potential for developing satellite, or secondary airports in major metropolitan areas, and an estimate of the benefits satellite airport development might provide. Approximately 365 satellite airport candidates were identified in the 23 largest metropolitan areas (large hubs). These airports have the capacity to support additional air traffic which might be diverted from the larger more congested air carrier airports in each area. Maximum utilization of these satellite facilities could maintain aircraft congestion and delay at the top 25 airports at or below 1975 levels for up to 15 years. While the analysis shows there is additional capacity available at satellite airports, there appear to be insufficient incentives at present for aircraft operators in use these facilities.

AN (1) AD-A037 080/XAG

FG (2) 010500

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Airport Quotas and Peak Hour Pricing: Analysis of Airport Network Impacts.

DN (9) Final rept.

AU (10) Fromme,William R.

Swan,William M.

RD (11) Jun 1976

PG (12) 171 Pages

RS (14) FAA-AVP-77-12

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-AVP-77-5, AD-A036 773.

DE (23) *Airports, *Air traffic control systems, *Economic analysis

Congestion, Commercial aviation, Cost analysis, Economic models,

Marketing, Air traffic, Networks

ID (25) Prices, Quotas

AB (27) This report provides an evaluation of the impacts of airport quotas and peak-hour pricing on air traffic congestion and airport system delay.

This analysis addresses two issues. First, would a schedule of peak-load pricing and quotas reduce airport system delays. Second, would a schedule of peak-pricing and quotas complement the system improvements provided by the technological features of the UG3RD. It is concluded, as a result of this analysis, that, in theory, peak-hour pricing and quota alternatives would effectively complement the technological features of the UG3RD by relieving aircraft congestion and delay and improving the flow of air traffic between the 25 largest air carrier airports. While there are theoretical advantages to pricing and quota alternatives, there are economic and institutional constraints limiting their implementation on a widespread scale.

Included among these constraints are the unresolved issues which might confront the FAA, airport sponsors, and the airlines. (Author)

AN (1) AD-A028 058/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Progress Toward Development of Civil Airworthiness Criteria for Powered-Lift Aircraft.

DN (9) Final rept.

AU (10) Scott,Barry C.

Hynes,Charles S.

Martin,Paul W.

Bryder,Ralph B.

RD (11) May 1976

PG (12) 75 Pages

RS (14) FAA-RD-76-100

RN (18) NASA-TM-X-73124

RC (20) Unclassified report

DE (23) *Airworthiness, *Short takeoff aircraft, *Vertical takeoff aircraft, *Commercial aircraft

Powered lift, Criteria, Aircraft landings, Flareout, Approach, Aviation safety, Flight paths, Civil aviation

ID (25) Go-around

AB (27) This report summarizes the results of a joint NASA-FAA research program directed toward development of civil airworthiness flight-criteria for power-lift transports. Tentative criteria are proposed for performance

and handling characteristics for powered-lift transport aircraft in commercial service. The aircraft considered are primarily wing-supported vehicles which rely upon the propulsion system for a significant portion of lift and control. VTOL aircraft are excluded. The flight criteria treat primarily the approach and landing flight phases, because it is in these flight phases that the greatest use of powered lift is made, and the greatest differences from conventional aircraft tend to appear. Consequently, the flight task tends to become most demanding. The tentative criteria are based on simulation and flight experience with a variety of powered-lift concepts. These concepts have not employed flight director, advanced displays, or advanced augmentation systems. The tentative criteria proposed were formulated by a working group comprised of representatives of the U.S., British, French, and Canadian airworthiness authorities, as well as research personnel of the NASA and other organizations. It is recognized that more work is needed to assure general applicability of the criteria. (Author)

AN (1) AD-A031 493/XAG

FG (2) 230400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Visual Evaluation of Smoke-Protective Devices

**AU (10) Vaughan, John A.
Welsh, Kenneth W.**

RD (11) May 1976

PG (12) 12 Pages

RS (14) FAA-AM-76-5

RC (20) Unclassified report

DE (23) *Goggles

Protective masks, Oxygen masks, Eyeglasses, Smoke, Flight crews, Visual acuity, Visual perception, Stereoscopes, Depth, Color vision, Peripheral vision, Displacement

AB (27) This study was designed to determine the visual characteristics of smoke-protective devices for flight deck crews. Visual measurements were made on five male subjects, who ranged in age from 35 to 54, while they were wearing each of the 26 devices tested. These measurements included (1) visual field, (2) visual acuity, (3) stereoscopic depth perception, (4) color vision, and (5) bifocal displacement. Reduction in the temporal and inferior fields was found with some of the goggles-mask combinations. The data indicate that 30.8 percent of the test items degraded visual acuity below 20/20 at the 0.4 m distance,

15.4 percent at 0.76 m, and 7.6 percent at 6.0 m. Mean values of depth perception ranged from 2.4 percent to 404.4 percent over control. The three tinted goggles created no alterations in color perception. Bifocals worn with the oxygen mask were displaced upward; those worn with the one-piece test items were displaced downward. Criteria for an acceptable smoke-protective device are discussed. (Author)

AN (1) AD-A031 881/XAG

**FG (2) 050600
050800**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) An Investigation of Time-Sharing Ability as a Factor in Complex Performance.

**AU (10) Jennings, Alan E.
Chiles, W. Dean**

RD (11) May 1976

PG (12) 17 Pages

RS (14) FAA-AM-76-1

RC (20) Unclassified report

**DE (23) *Performance(Human), *Time sharing, *Job training, *Attention
Mental ability, Psychological tests, Tracking, Problem solving,
Monitoring, Discrimination, Personnel selection, Test methods**

ID (25) Complex performance, *Divided attention

AB (27) Thirty-nine men were tested on a total of six tasks; performance was measured on each task presented individually and on two complex tasks made up of three-task subsets. The tasks measured monitoring, arithmetic, pattern-discrimination, tracking, and problem-solving performance. Two separate test sessions were conducted for each of the individual tasks and for each of the two complex tasks. Factor analyses were performed on the resultant data to determine if there would merge a time-sharing ability, defined as a reliable source of variance associated with complex performance but independent of simple-task performance of the constituent tasks. A factor was found that showed high loadings for two different monitoring tasks for complex performance but negligible loadings for these tasks for simple performance; separate independent factors were found for the two monitoring tasks when they were performed under simple-task conditions. The monitoring measures appear to possess properties that would be expected of measures of a time-sharing ability. The findings suggest that a suitable measure of time-sharing ability would be of value in the selection and screening of candidates for complex jobs. (Author)

AN (1) AD-A036 773/XAG

FG (2) 010500

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Airport Quotas and Peak Hour Pricing: Theory and Practice.

DN (9) Final rept.

AU (10) Odoni,Amedo R.

Vittek,Joseph F.

RD (11) May 1976

PG (12) 92 Pages

RS (14) FAA-AVP-77-5

RC (20) Unclassified report

DE (23) *Airports, *Aircraft landings, *Economic analysis

Congestion, New York City(New York), Great Britain, Commercial aviation, Cost analysis, Economic models, Marketing

ID (25) Prices, London(Great Britain), Quotas

AB (27) This report examines the leading theoretical studies not only of airport peak-hour pricing but also of the congestion costs associated with airport delays and presents a consistent formulation of both. The report also considers purely administrative measures, such as quotas, and hybrid systems which combine administrative and economic control techniques. These are all compared to the real-world situation and problems of implementation discussed. The actual experiences of the Port Authority of New York and New Jersey at the three major New York area airports and the British Airports Authority at Heathrow are then presented. Both organizations administer hybrid quota/peak-hour pricing systems in conjunction with their respective air traffic control authorities. Their experience is compared with the theoretical analyses. (Author)

AN (1) AD-A037 064/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Analysis of the Impact of Terminal Control Area (TCA) Implementation on General Aviation Activity.

DN (9) Final rept. Aug-Nov 75

AU (10) Daniels,James M.

RD (11) May 1976

PG (12) 82 Pages

RS (14) FAA-AVP-77-13

RC (20) Unclassified report

DE (23) *Air traffic control terminal areas, *Civil aviation

Airports, Congestion, User needs, Air traffic, Surveys, Time series analysis, Regression analysis, Overflight, Impact

AB (27) This report describes an investigation of the probable effect of selected TCA implementation upon general aviation operations. The results are obtained from an analysis of historical time series data as well as current traffic survey data. The specific findings were: the establishment of a TCA (either Group I or Group II) does not appear to dramatically affect the total number of airport operations attributable to general aviation aircraft; the presence of a TCA at a large hub airport is accompanied by a marked shift towards the more sophisticated, more expensive, primarily business oriented aircraft; overflight and secondary operations are not obviously affected by the presence or absence of a TCA; and the profile of general aviation overflight and secondary operations shows no correlation with the presence or type of TCA.

AN (1) AD-A100 912/XAG

FG (2) 090100

201400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Localizer Traveling Wave Antenna Development.

DN (9) Final rept. 1970-1976

AU (10) Peterson,Carl G.

RD (11) May 1976

PG (12) 88 Pages

RS (14) FAA-RD-76-129

RC (20) Unclassified report

DE (23) *Antenna arrays, *Traveling waves, *Instrument landings, *Loop antennas, *Antenna radiation patterns

Radomes, United States Government, Integrated systems, Aeronautics, Monitors, Antennas

ID (25) Localizer antennas, TWA(Traveling Wave Antennas), Antennas(Traveling wave)

AB (27) Federal Aviation Administration Systems and Research and Development efforts have resulted in the development of a set of Instrument Landing System localizer antenna arrays of the traveling wave type. These

arrays including integral monitors have been shown capable of overcoming the major shortcomings associated with earlier antennas. The results of this effort are summarized. Distinguishing performance characteristics are pointed out for each of the so-called Type O, 1A, 1B and II antenna arrays.

AN (1) AD-A023 765/XAG

FG (2) 210400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Report to Congress by the Federal Aviation Administration on Proposed Programs for Aviation Energy Savings.

DN (9) Final rept.

RD (11) Apr 1976

PG (12) 132 Pages

RC (20) Unclassified report

DE (23) *Energy conservation, *Aviation fuels

Reports, Fuel consumption, Federal law, Goal programming, Regulations, Fuel shortages, Modification, Commercial aviation, Savings, Bibliographies, Simulation

ID (25) EPCA(Energy Policy and Conservation Act), FAA(Federal Aviation Administration), Scenarios, Federal Aviation Administration, Energy Policy and Conservation Act

AB (27) Pursuant to Section 382 (a) (2) of the Energy Policy and Conservation Act, P. L. 94-163, this report describes options available to the Federal Aviation Administration and the aviation industry for increasing fuel efficiency and thereby helping to conserve our Nation's scarce energy resources.

AN (1) AD-A024 543/XAG

FG (2) 010300

010500

040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Wind Shear Program Data Management Plan

AU (10) Mandel, Eric

Goodwin, Larry

DeMattio, Jim

RD (11) Apr 1976

PG (12) 38 Pages

RS (14) FAA-RD-76-25

PJ (16) FAA-154-451-05

RC (20) Unclassified report

DE (23) *Aircraft, *Airports, *Wind shear, *Data management

Data acquisition, Meteorological data, Warning systems, Meteorological instruments, Anemometers

AB (27) This data management plan outlines the data collection efforts of the wind shear program. It provides a set of standard data collection, processing, and analysis requirements. Included are: an outline of the parameters to be recorded and the associated accuracies, resolutions, ranges, bandwidths, and timing requirements necessary to study the wind shear frequencies affecting aircraft; the test site conditions for each of the ground-based data collection sites; a listing of the type of sensors and their location for each data collection effort; and the wind shear data base functional requirements.

AN (1) AD-A025 152/XAG

FG (2) 170703

250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Integrated National Airspace Communication System (INACS) for the Support of Air Traffic Control Gross Cost/Benefit Analysis.

RD (11) 15 Apr 1976

PG (12) 59 Pages

RS (14) FAA-INACS-061-221-CB

RC (20) Unclassified report

NO (21) See also Rept. no. FAA-INACS-061-221-P1, AD-A015 823.

DE (23) *Communication and radio systems, *Air traffic control systems
Cost benefits, Advanced systems, Costs, Integrated systems

AB (27) This report presents the methodology and the results of a comparison of the gross costs of the present day communications system (projected) and the Integrated National Airspace Communications System (INACS) for the period 1982 through 1996. The INACS cost inputs to have been derived for a system (INACS) which is only in a concept stage. System specifications have not yet been prepared. The projected INACS costs have been structured to permit a near direct cost comparison with like subsystem elements in the present system. The summary of present day system communication costs projected from 1974 through the year 2001 was provided by the Policy Analysis Division, AVP-200, Office of Aviation Policy. The cost estimates presented are subject to change, refinement, and validation by cost benefit analyses work to be conducted under Phase I of the INACS program as set forth in the document FAA-INACS-061-221-P1, dated October 1, 1975, titled, 'INACS

Phase 1 Program Plan.' The primary objective of this report is to present data to permit an Agency decision as to the feasibility of implementing the Phase 1 activities proposed under the INACS program.
(Author)

AN (1) AD-A031 492/XAG

FG (2) 060500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE**

TI (6) Aviation Medicine Translations: Annotated Bibliography of Recently Translated Material. IX

AU (10) Constant, Gregory N.

Grimm, E. Jean

Goulden, D. R.

Murcko, LaNelle E.

RD (11) Apr 1976

PG (12) 12 Pages

RS (14) FAA-AM-76-4

RC (20) Unclassified report

NO (21) See also AD-776 136.

DE (23) *Aviation medicine, *Bibliographies

Hypoxia, Translations, Stress(Physiology), Vestibular apparatus, Cardiovascular system, Nystagmus, Performance(Human), Carbon monoxide, Blood, Vision, Sonic boom, Aviation safety, Psychology, Aviation accidents, Flight crews, Toxicology, Noise(Sound)

AB (27) An annotated bibliography of translations of foreign-language articles is presented. The 20 listed entries are concerned with studies of cardiology; aviation vestibular testing and vestibular factors in accidents; use of bones of identification of remains; psychological characteristics associated with pilots, stewardesses, and nuclear workers; stresses of flying; and performance effects of time-zone crossing as well as studies of hypoxia, visual illusions, lighting of instrument dials, noise effects, toxicology, physiological effects of infrasonic stimulation, and expert testimony in aircraft accident investigation.

AN (1) AD-A110 424/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION
SECURITY**

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 3, 1 Jul-31 Dec 75.

RD (11) 19 Apr 1976

PG (12) 25 Pages

RS (14) FAA-ACS-82-3

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Security, *Civil aviation

Aviation safety, Commercial aviation, Threats, Sabotage, Aircraft hijacking, Bombs, Explosives, Weapons, Detectors, Passengers, Terrorism, Prevention

AB (27) For complete abstract, see AD-A110 349.

AN (1) AD-A024 704/XAG

FG (2) 050600

050800

**CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL
INST**

TI (6) Effects of Ground Trainer Use on the Psychological and Physiological States of Students in Private Pilot Training

AU (10) Smith, Roger C.

Melton, C. E., Jr

RD (11) Mar 1976

PG (12) 9 Pages

RN (18) FAA-AM-76-2

RC (20) Unclassified report

DE (23) *Flight training, *Civil aviation, *Stress(Physiology)

Anxiety, Performance(Human), Learning, Comparison, Airborne, Flight simulators, Test methods, Training devices, Training planes, Pilots

AB (27) Student pilots receiving all instruction in an aircraft and student pilots who received a portion of their flight training in a ground trainer were compared in terms of flying proficiency, psychological (anxiety) states during training, and certain physiological measures. Pilot performance appeared to be equal in both groups, as measured by objective ratings and check-pilot observations. There was no evidence that student pilot anxiety was differentially influenced by these two training procedures, although anxiety did vary as a function of the type of flight (dual, solo, evaluation). There were some trends in the physiological data to suggest slightly more favorable conditions in the ground trainer. No contraindications to ground trainer use were evident.

AN (1) AD-A024 705/XAG
FG (2) 250400
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL
AEROMEDICAL
INST

TI (6) **Massed Versus Distributed Practice in Learned Improvement of Speech
Intelligibility**

AU (10) Tobias, Jerry V.
RD (11) Mar 1976
PG (12) 9 Pages
RN (18) FAA-AM-76-3
RC (20) Unclassified report
DE (23) *Speech recognition, *Noise(Sound), *Learning
Intelligibility, Distortion, Sound pitch, Voice communications
AB (27) Student pilots or new air traffic controllers have two ways to learn to understand the noisy and distorted communications common to aircraft operations: they may learn as they are working on other aspects of the activity, or they may learn by devoting a continuous period of time to speech-intelligibility improvement. Work completed at this laboratory indicates that two listening sessions of less than 1 hour each can accomplish the improvement and, under some circumstances, a single session will do. The current experiments are intended to reveal some of the microstructure of this learning process.

AN (1) AD-A369 104/XAG
FG (2) 050800
010600
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION
MEDICINE

TI (6) **Physiological Index as an Aid in Developing Airline Pilot Scheduling
Patterns**

AU (10) Mohler, Stanley R.
RD (11) Mar 1976
PG (12) 10 Pages
RN (18) XH-FAA-AM
RC (20) Unclassified report
AL (22) Availability: Pub. in Aviation, Space, and Environmental Medicine, v47
n3 p238-247, 1976. Available only to DTIC users. No copies furnished by
NTIS.
DE (23) *PILOTS, *SCHEDULING, *AVIATION PERSONNEL

REPRINTS, FLIGHT CREWS, STRESS(PSYCHOLOGY), COMMERCIAL AVIATION,
DATA
ACQUISITION, TOLERANCES(PHYSIOLOGY), MULTIPLICATION FACTOR,
PRESSURE
PATTERN FLIGHT

AB (27) A multiplicative and additive formula has been developed for assisting in the development of schedules for airline pilots and flight engineers. The formula is based on freshness/tiredness data derived from aircrew on world flights. It should materially assist those who develop the schedules to avoid, where possible, finalizing those crew patterns that would impose a severe physiologic load on cockpit personnel. The objective of the application of the formula is to assure that crew members retain adequate "physiologic reserve" in the course of flying various segments of a pattern. This enables them to absorb the stresses of schedule delays or disruptions, as well as un-foreseen operational problems and flight emergencies.
20

AN (1) AD-A020 550/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND
STATISTICS DIV

TI (6) **Current Aviation Statistics: Air Traffic Activity Fiscal Year 1975.**

RD (11) Feb 1976
PG (12) 17 Pages
RC (20) Unclassified report
NO (21) See also report dated Jul 74, AD-784 430.
DE (23) *Civil aviation, *Military aircraft, *Air traffic
Statistical data, Classification, Time, Variations, Operation,
Instrument flight, Terminal flight facilities
ID (25) Annual changes, Visual flight rules, DOT/2 A, DOT/5 L
AB (27) Tabular data for the time period 1966-1975 are given on the number of general and military aircraft handled, including the percent annual change; departures and overs; itinerant, instrument, and visual flight operations; and flight service station workload.

AN (1) AD-A021 837/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) **Engineering and Development Program Plan: Flight Service System.**

RD (11) Feb 1976
PG (12) 66 Pages
RS (14) FAA-ARD-440-2
RN (18) FAA-ED-13-1
RC (20) Unclassified report
DE (23) *Air traffic control systems
Systems engineering, Data acquisition, Data transmission systems, Data management, Geographical distribution, Automation, Forecasting
ID (25) DOT/4IZ/ID, DOT/2A, *Flight service stations
AB (27) The Flight Service System Engineering and Development Program Plan describes the program required to design, develop, and implement a modernized and automated Flight Service System capable of satisfying the forecast 1990 demand for services. Program objective, approach, development activities, expected results, and resource requirements are set forth. The modernized Flight Service System supports the basic concept of fewer facilities and self-briefing described in the OST/FAA study, 'A Proposal for the Future of Flight Service Stations'.

AN (1) AD-A022 341/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Concorde Supersonic Transport Aircraft. Final Environmental Impact Statement. Volume I. Addendum.

RD (11) Feb 1976

PG (12) 65 Pages

RC (20) Unclassified report

NO (21) See also report dated Sep 75, AD-A018 088.

DE (23) *Supersonic transports, *Environments, *Airports

Decision making, New York, Virginia, Aircraft noise, Stratosphere, Skin diseases, Air pollution, Fuel consumption, Scale, Ozone, Safety, Public opinion

ID (25) Public hearings, John F Kennedy International Airport, Dulles International Airport, Concorde aircraft

AB (27) In November 1975 a final environmental impact statement was prepared on the proposal to allow commercial service landings of the Concorde supersonic transport at Kennedy airport in New York and Dulles airport, and a public hearing was held in January 1976. Comments of those receiving the draft EIS and testimony at the hearing were analyzed and are presented as an addendum to the final EIS.

AN (1) AD-A025 091/XAG

FG (2) 010600

050200

140400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) National Airspace System Microfiche Pilot Project.

DN (9) Final rept.

AU (10) McCrory, Michael J.

RD (11) Feb 1976

PG (12) 42 Pages

RS (14) FAA-RD-76-40

PJ (16) FAA-122-109-09A

RC (20) Unclassified report

DE (23) *Microfiche, *Documents, *Civil aviation

United States Government, Reading machines, Air traffic control systems, Printers(Data processing), Indexes, Information retrieval, Feasibility studies, User needs, Acceptability

AB (27) The original impetus for this project came from the Computer Program production tools task. The approach chosen was to provide microfiche readers and reader/printers to representative test sites. Participants were the New York Air Route Traffic Control Center (ARTCC), Houston ARTCC, and Houston Intercontinental Tower, as well as the Air Traffic Service (AAT-500) and Airway Facilities Service (AAF-600) elements located at NAFEC. AAT-500 and AAF-600 supplied the documentation for the microfiche distribution tests. During the course of this study approximately eighty thousand pages of documentation were photographed and another eighty thousand pages of computer listings were produced using the computer output to microfiche (COM) technique. Microfiche Production culminated with the delivery of the complete documentation for the A3d2.1 Enroute and the A0.9 Terminal Systems. The users had mixed reactions to a microfiche documentation system. In general there was acceptance of the printed documentation but resistance to the computer listings on microfiche. The problems encountered in addition to the obvious one of not being able to annotate film can, for the most part, be overcome with better control over the production facility. These problems included poor turn-around time and a need to educate the contractor in the unique aspects of FAA documentation. (Author)

AN (1) AD-A028 223/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION POLICY AND PLANS

TI (6) Profiles of Scheduled Air Carrier Airport Operations -- Top 100 U.S. Airports. November 7, 1975.

RD (11) Feb 1976

PG (12) 307 Pages

RS (14) FAA-AVP-76-4

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *AIR TRAFFIC, *AIRPORTS

SURVEYS, OPERATION, SCHEDULING, ARRIVAL, TAKEOFF, URBAN AREAS, TIME,

IDENTIFICATION, TABLES(DATA)

ID (25) Departures

AB (27) This report provides data on total scheduled air carrier aircraft operations by hour of the day for Friday, November 7, 1975, for the top 100 airports within the 50 states of the United States, the District of Columbia, and Puerto Rico. The selection of the top 100 airports was based on the number of air carrier passenger enplanements in domestic and international service.

AN (1) AD-A021 097/XAG

FG (2) 010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Analysis, Flight Test and Evaluation of Honeywell, McDonnell-Douglas and RCA Airborne Collision Avoidance Systems (ACAS).

RD (11) Jan 1976

PG (12) 55 Pages

RS (14) FAA-RD-76-17

RC (20) Unclassified report

DE (23) *Collision avoidance

Threat evaluation, Flight testing, Aircraft landings, Costs, Performance, Takeoff, Airborne, Threats, Air traffic, Logic, Mission profiles, Avionics, Maneuvers

ID (25) Avoids projects, DOT/4DZ/DA, DOT/4IZ/ID

AB (27) As part of its Aircraft Separation Assurance Program, the FAA has evaluated three Airborne Collision Avoidance Systems (ACAS) designed and built by Honeywell, McDonnell-Douglas and RCA. The evaluation consisted of analyses, simulations and maneuver selection logics developed by the Air Transport Association's ACAS Technical Working Group as a standard for comparison.

AN (1) AD-A021 629/XAG

FG (2) 050100
050600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - Air Traffic Control Specialist Personnel Support.

RD (11) 01 Jan 1976

PG (12) 31 Pages

RS (14) FAA-ED-21-3

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Personnel development, *Civil aviation,

*Management planning and control

Methodology, Training devices, Simulators, Human factors engineering,

Computer applications, Training, Test methods, Teaching methods

ID (25) Projects, DOT/2 A, DOT/4FZ/FA

AB (27) This plan defines the objectives, development activities, schedules and resource requirements for the engineering and development activities supporting the overall FAA program to upgrade the selection, training and performance evaluation of air traffic control specialists.

AN (1) AD-A022 599/XAG

FG (2) 010500

200100

240100

240400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The Federal Aviation Administration Five-Year Environmental Plan 1976-1980.

RD (11) Jan 1976

PG (12) 26 Pages

RC (20) Unclassified report

DE (23) *Pollution abatement, *Airports

Landing fields, Commercial aviation, Aircraft noise, Air pollution,

Noise pollution, Water pollution, Environments, Planning, Land use,

Compatibility, Policies, Noise reduction, Law, Control, Environmental impact statements

ID (25) Federal Aviation Agency

AB (27) The purpose of this document is to describe the agency's environmental policies and 5 year plan. The Federal Aviation Administration is committed to the development, evaluation, and execution of feasible programs designed to identify and minimize undesirable environmental effects attributable to the transportation system (noise, air and water

pollution, and land use activities). The program consists of four major task areas: Policies and Procedures for Considering Environmental Impacts, Noise Reduction and Control, Air Pollution and Control, and Land Use Compatibility.

AN (1) AD-A026 753/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION POLICY

TI (6) Terminal Area Forecast - 1977-1987.

RD (11) Jan 1976

PG (12) 335 Pages

RS (14) FAA-AVP-76-5

RC (20) Unclassified report

NO (21) See also report dated Sep 75, AD-A017 095.

DE (23) *Civil aviation, *Air traffic, *Forecasting

Airports, Air traffic control terminal areas, Airport control towers, Regions, Management planning and control, Manpower, Equipment, United States

AB (27) The report contains forecasts for air carrier and air taxi enplanements, air carrier and air taxi aircraft operations, itinerant, total and instrument aircraft operations, and instrument approaches at 872 airports throughout the United States. The airports in this publication include all those with Federal Aviation Administration air traffic control towers and those with air carrier service. The report is intended as an aid for anticipating future manpower and equipment needs at terminal areas.

AN (1) AD-A034 653/XAG

FG (2) 050200

090700

200300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Grounding, Bonding and Shielding Bibliography 1930 to 1971.

DN (9) Final rept.

RD (11) Jan 1976

PG (12) 127 Pages

RS (14) FAA-RD-76-145

RN (18) GIDEP-E087-0185

RC (20) Unclassified report

DE (23) *Electrical grounding, *Electromagnetic shielding, *Bibliographies
Electrical insulation, Cable assemblies, Wire, Lightning arresters, Transmission lines, Radio stations, Antennas, Circuits, Electrical corona, Dielectric properties, Transformers, Bonding

AB (27) As a result of a literature search carried out in conjunction with an extensive effort concerning grounding, bonding and shielding, a bibliography was compiled. The bibliography, covering the period 1930 to 1971, is contained in this report. A bibliography covering the period 1972 to the present will be published as a separate report.
(Author)

AN (1) AD-A025 301/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Biennial Operations Review (1st), 1975-1976, Conference Summary.

RD (11) 1976

PG (12) 532 Pages

RC (20) Unclassified report

DE (23) *Aviation safety

Aircraft equipment, Aircraft maintenance, Regulations, Air traffic control systems, Air traffic controllers, Air traffic, Commercial aviation, Training, Conferences

AN (1) AD-A028 309/XAG

FG (2) 010500

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

SYSTEM PLANS

TI (6) Selected Documents for Aviation Planning in the Terminal Area.

RD (11) 1976

PG (12) 64 Pages

RS (14) FAA-ASP-76-3

RC (20) Unclassified report

DE (23) *Civil aviation, *Airports, *Management planning and control

Decision making, Documents, Statistical data, Air traffic, Pilots, Air traffic control systems, Standards, Noise pollution, Cost estimates, Taxes

AB (27) The purpose of the publication is to provide a listing of documents likely to be useful to persons engaged in aviation planning or decision making, particularly for planning on and around airports. Documents are

listed in seven categories: (1) Terminal Area Statistics; (2) Standards and Criteria; (3) Terminal Area Planning; (4) Forecasts; (5) Environmental Considerations; (6) Costs/Revenue; and (7) General. Within each category, documents are listed alphabetically and each contains a brief synopsis.

AN (1) AD-A040 167/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Annual Report of Operations under the Airport and Airway Development Act (7th) of 1970 as Amended by the Airport and Airway Development Act Amendments of 1976.

RD (11) 1976

PG (12) 103 Pages

RC (20) Unclassified report

NO (21) See also AD-A019 153.

DE (23) *Airports, *Civil aviation, *Air transportation
Systems engineering, Aviation safety, Planning, Research management,
Jet aircraft

ID (25) Airport and Airway Development Act, Airport Development Acceleration Act

AB (27) With the enactment of the Airport and Airway Development Act of 1970 the nation moved toward achieving an efficient and safe airport and airways system. Reflecting the role of aviation in the economy and the public benefit derived from safe and efficient operation, that statute (1) found the airport and airway system inadequate to meet the requirements of the then current and projected growth in aviation, (2) declared substantial expansion and improvement was required to meet the demands of interstate commerce, the postal service, and national defense, and (3) established an expanded program of federal matching grants to sponsors of airports serving commercial and general aviation. Moreover, the Act established a system of user taxes paid into a trust fund to provide an assured, long-term source of funding. Section 24 of the Airport and Airway Development Act requires that the Secretary, Department of Transportation, submit an annual report to Congress of operations under Part II of the Act for the preceeding fiscal year. This report covers operation for the fiscal year ending June 30, 1976 and e Transition Quarter ending September 30, 1976.

AN (1) AD-A041 568/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) U. S. Civil Airmen Statistics.

RD (11) 1976

PG (12) 34 Pages

RC (20) Unclassified report

DE (23) *Pilots, *Civil aviation

Flight crews, Statistics, Commercial aviation

AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma.

AN (1) AD-A019 152/XAG

FG (2) 010300

090100

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA AERONAUTICAL CENTER

TI (6) Atmospheric Electricity Protection for Electric and Electronic Systems -Recommended Practices.

DN (9) Technical rept.

AU (10) Davis, J. A.

RD (11) Dec 1975

PG (12) 22 Pages

RS (14) FAA-TR-AAC-213-15

RC (20) Unclassified report

DE (23) *Lightning arresters, *Suppressors, *Aviation safety

Transients, Protection, Atmospheric electricity, Avionics, Electrical equipment, Electronic equipment, Aircraft

ID (25) DOT/50

AB (27) Lightning strikes to aircraft produce transient currents on skin surfaces and occasionally induce transient currents in the electrical and electronic systems' wiring. Atmospheric electricity also includes static discharge which can affect the safety of an aircraft by degrading the electrical/electronic systems' performance at a time when atmospheric conditions are severe and these systems are most needed for instrument flight procedures. The paper presents recommended practices for the evaluation of system protection from the effects of atmospheric electricity.

AN (1) AD-A020 169/XAG

FG (2) 010500
240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Air Quality Impact Analysis of a Proposed North/South Runway at
Anchorage International Airport.

DN (9) Final rept.

AU (10) Tigue, John E.
Carpenter, Larry K.

RD (11) Dec 1975

PG (12) 95 Pages

RS (14) FAA-RD-75-179

RC (20) Unclassified report

DE (23) *Air quality, *Air pollution

Mathematical prediction, Alaska, International airports, Runways,
Ground support equipment, Air traffic, Exhaust gases, Dispersing,
Plumes, Emission spectra, Computerized simulation, Adverse conditions,
Environments, Impact, Communities, Atmosphere models, Pollutants,
Spatial distribution, Flow charting, Concentration(Composition)

ID (25) Environmental impact, Anchorage(Alaska), AVAP computer program, DOT/5C

AB (27) This report presents an air quality analysis of the impact of a
proposed runway at Anchorage International Airport. A projection of
1978 air traffic conditions was made and the Airport Vicinity Air
Pollution (AVAP) model was used to calculate the aircraft impact upon
air quality for cases with and without the proposed runway. The AVAP
model is a Gaussian-plume-type dispersion model that utilizes point,
area, and line source formulations to simulate the airport system. The
air quality impact is evaluated by comparing the air quality
concentrations for the case with the proposed runway to the case
without the runway. Typical Anchorage days where the meteorology is
poor were selected such that rather poor air quality would result. The
study indicates that the addition of the proposed runway does not make
a significant impact upon the airport vicinity air quality. Areas of
concern do exist on the airport itself, but the impact on the
communities surrounding Anchorage International Airport is minimal.
(Author)

AN (1) AD-A022 993/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Area Navigation High Altitude Payoff Analysis Enroute Fast Time
Simulation Results.

DN (9) Final rept. Jan 73-Sep 75

AU (10) Cassell, Ricardo

RD (11) Dec 1975

PG (12) 550 Pages

RS (14) FAA-RD-76-26

PJ (16) FAA-044-326

RC (20) Unclassified report

NO (21) See also report dated Sep 74, AD-787 432.

DE (23) *Navigation, *Routing, *High altitude, *Air traffic control systems
Simulation, Trends, Systems analysis, Data bases, Conflict, Test
methods

ID (25) *Area navigation

AB (27) A series of fast time simulations of high altitude route structures
were conducted as a part of the FAA Area Navigation Engineering and
Development Program Plan. This report presents the results of these
simulations and supersedes the Preliminary Fast Time Simulation Results
Report dated August, 1974. System/user payoff conclusions are presented
based on the results of the simulations and observations by the author.
While the limitations of fast time simulation resulting from the lack
of controller intervention effects are recognized, the simulation
techniques employed provide, as a minimum, a substantial basis for the
identification of well marked trends and a sizeable data base upon
which a reasonable degree of confidence can be placed.

AN (1) AD-A023 810/XAG

FG (2) 010600
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
SYSTEMS
ENGINEERING MANAGEMENT

TI (6) Rationale for Improving the Protection against Midair Collisions.
Volume I. Summary.

DN (9) Final rept.

AU (10) Israel, David R.

Bock, Richard F.

Brennan, John L.

Johnston, Thomas M.

Jolitz, Gordon

RD (11) Dec 1975
PG (12) 31 Pages
RS (14) FAA-ED-75-1-Vol-1
RC (20) Unclassified report
DE (23) *Aviation safety, *Collision avoidance, *Air traffic control systems
Effectiveness, Optimization, Planning, Cost estimates, Aviation
accidents, Prevention, Civil aviation, Air traffic control radar beacon
system, Interrogator transmitters, Transponders, Airborne, Altitude,
Coding, Backup systems, Compatibility, Regulations
ID (25) Midair collisions, DABS(Discrete Address Beacon System), Discrete
address beacon system
AB (27) The existing surveillance-based air traffic control system has been
effective in preventing midair collisions, especially those involving
air carrier aircraft. Improvements in this effectiveness can be
achieved, in the short-term, through mandatory carriage of
altitude-encoding beacon (ATCRBS) transponders. To achieve the desired
major improvements in collision prevention for public air
transportation requires the addition of an independent backup
capability to the primary ground-based system and a new capability
beyond the limits of its surveillance coverage. These can be best
achieved in the mid-term by an airborne BCAS system based on the
mandatory carriage of altitude-encoding transponders. The BCAS design
should permit a longterm upgrading to the compatible DABS transponder
and implementation of IPC in at least the dense traffic areas.

AN (1) AD-A024 328/XAG
FG (2) 010600
**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND
STATISTICS DIV**

**TI (6) FAA Air Traffic Activity, Calendar Year 1975 and Terminal Area
Relationships, Fiscal Year 1975**

AU (10) Thompson,George
Wilson,Patricia

RD (11) 31 Dec 1975

PG (12) 291 Pages

RS (14) FAA-AMS-220

RC (20) Unclassified report

NO (21) See also report dated Mar 75, AD-A017 055.

DE (23) *Air traffic, *Civil aviation

Statistical data, Air traffic control systems, Towers, Airports,
Approach, Instrument landings, Instrument flight, Visual flight rules,
Air transportation, Management planning and control

AB (27) The report furnishes terminal and enroute air traffic activity

information of the National Airspace System. The data have been
reported by the FAA-operated Airport Traffic Control Towers (ATCTs),
Air Route Traffic Control Centers (ARTCCs), Flight Service Stations
(FSSs), Combined Station Towers (CS/Ts), International Flight Service
Stations (IFSSs), and Approach Control Facilities.

AN (1) AD-A024 544/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
SYSTEMS**

ENGINEERING MANAGEMENT

**TI (6) Rationale for Improving the Protection Against Mid-Air Collisions.
Volume II. Main Text.**

DN (9) Final rept.

AU (10) Israel,David R.

RD (11) Dec 1975

PG (12) 156 Pages

RS (14) FAA-ED-75-1-Vol-2

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A023 810.

DE (23) *Collision avoidance, *Civil aviation

Air traffic control systems, Interrogators, Transponders, Beacons,
Warning systems, Proximity devices, Cost effectiveness, Airborne
warning and control system, Aviation safety, Regulations

ID (25) *Midair collisions

AB (27) The document contains charts and viewgraphs illustrating the concepts,
and hardware tests that have been conducted by the government and
private industry in an attempt to provide the maximum protection
against midair collisions for all classes of aircraft at minimum cost.
The document shows a logical evolution to Beacon Derived Collision
Avoidance System (BCAS) and Intermittent Positive Control (IPC) as the
most cost effective solution to the Midair Collision problem, with a
statement of current concepts and programs being implemented to realize
the potential benefits of the BCAS and IPC systems. Additional
procedural and Regulatory Actions are also considered.

AN (1) AD-A026 991/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION**

SYSTEM PLANS

TI (6) Establishment Criteria for Category I Instrument Landing System (ILS).

DN (9) Final rept.
AU (10) Ashby, Wally
RD (11) Dec 1975
PG (12) 80 Pages
RS (14) FAA-ASP-75-1
RC (20) Unclassified report
DE (23) *INSTRUMENT LANDINGS

BENEFITS, TURBOJET ENGINES, RUNWAYS, MARKER LIGHTS, LANDING LIGHTS,

AVIATION SAFETY

AB (27) This report develops revised establishment criteria for the Instrument Landing system (ILS) with approach lights based on benefit/cost analysis, as follows: (1) Air carrier airports with sustained turbojet operations are eligible for an initial ILS (same as previous criteria). (2) At other than jet-use carrier airports and for multiple ILS installations, criteria are expressed as a function of (a) annual instrument approaches by user category, and (b) nonprecision approach minimums on the candidate ILS runway. For example, a runway at a nonhub air carrier airport without turbojet service that has nonprecision approach minimums of 500-1 is an ILS candidate with any combination of 350 air carrier, 375 air taxi, or 1,500 general aviation annual instrument approaches.

AN (1) AD-A031 027/XAG
FG (2) 120500
240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Airport Vicinity Air Pollution Model Computer Source Code.

DN (9) Model-Simulation

AU (10) Tigue, John

RD (11) Dec 1975

PG (12) 1 Page

RN (18) FAA/DF-76/001

RC (20) Unclassified report

AL (22) Availability: Magnetic tape \$300.00. Source tape is in EBCDIC character set. Specify 7 or 9 track character set density and parity. Call NTIS computer Products with questions. Price includes documentation AD-A020 352. Also available as punched cards (3753 cards). No copies furnished by DDC.

DE (23) *Air pollution, *Airports

Computer programming, Computerized simulation, FORTRAN, Models,

Environmental protection, Impact, Communities, Assessment, Aircraft, Vehicles, Air quality, Sources, Programming languages, Inventory, Emission, Dispersion relations, Meteorological data

ID (25) *Models-Simulation, FORTRAN 4 programming language, Airport models

AB (27) The Airport Vicinity Air Pollution (AVAP) Model is a Fortran IV computer source program. The AVAP model is a comprehensive airport simulation model which can serve as a tool in evaluating the total air quality impact of all airport operations on the airport vicinity. The model evaluates aircraft, airport non-aircraft, and environs sources and computes pollution concentrations due to each. Input is required for airport configuration, aircraft and ground vehicle operation, fixed sources, and meteorology. Also listed is a copy of an input data set for Washington National Airport. ... Software Description: The program is written in the FORTRAN IV programming language for implementation on an IBM 360/195 computer using the OS version, HASP level operating system. 340K bytes of core storage are required to operate the model.
21

AN (1) AD-A033 210/XAG

FG (2) 010500
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Statistical Handbook of Aviation. Calendar Year 1975.

DN (9) Annual rept.

AU (10) Cayce, Betty V.

RD (11) 31 Dec 1975

PG (12) 158 Pages

RC (20) Unclassified report

NO (21) See also report dated 31 Dec 75, AD-A020 620.

DE (23) *Civil aviation, *Handbooks

Statistical data, Organizations, Pilots, Flight crews, Aircraft, Air traffic, Airports, Air transportation, Aviation accidents, Manufacturing, Exports, Airport control towers, Air traffic control systems

ID (25) National airspace system, Registration

AB (27) This report covers statistical data, including the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, U.S. Registered Aircraft, Aeronautical Production and Exports, Aircraft Accidents, and a Glossary of the terms used in this publication.

AN (1) AD-A034 823/XAG
FG (2) 010309
010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS

TI (6) Census of U. S. Civil Aircraft, Calendar Year 1975.

DN (9) Annual rept.

AU (10) Cayce, Betty V.

RD (11) 31 Dec 1975

PG (12) 397 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Census

Commercial aircraft, Commercial aviation, Air transportation, Air
traffic, Industrial production, Landing fields, Heliports, Tables(Data)

AB (27) This report covers statistical data, including General Aviation, Air
Carrier, Aeronautical Production, Airports, detailed computer printouts
for aircraft, and a Glossary of the terms used in this publication.
(Author)

AN (1) AD-A081 101/XAG
FG (2) 050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY

TI (6) Aviation Forecasts Fiscal Years 1976-1987. Summary and Briefing
Conference.

RD (11) Dec 1975

PG (12) 128 Pages

RS (14) FAA-AVP-76-1

RC (20) Unclassified report

NO (21) See also AD-A017 095.

DE (23) *Civil aviation, *United States Government, *Planning, *Forecasting,
*Symposia

Models, Management planning and control, Policies, Federal budgets,
Economics, Commercial aircraft, Military aircraft, Air traffic, Air
Traffic Control Systems, Airports, Operation, Domestic, International

ID (25) Federal Aviation Administration

AB (27) The Conference was held for the primary purpose of (1) reemphasizing
the importance of accurate data and aviation activity forecasts for
Federal Aviation Administration (FAA) planning and budgetary purposes,
and (2) stimulating the interchange of ideas between FAA and the

aviation community, particularly between the 'forecasters' and the
'forecast users.' During the Conference, the Aviation Forecast Branch
presented highlights of the Aviation Forecasts for Fiscal Years
1976-1987 and described some of the thought processes, forecasting
techniques, and assumptions which underlie graphs and data presented in
various FAA forecast publications. This publication includes Conference
Papers as well as representative questions and answers raised during
the discussion period.

AN (1) AD-A099 680/XAG
FG (2) 170900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION SYSTEM
PLANS

TI (6) Establishment Criteria for ASDE-3 (Airport Surface Detection
Equipment).

DN (9) Final rept.

AU (10) Olson, M.

RD (11) Dec 1975

PG (12) 56 Pages

RS (14) FAA-ASP-75-3

RC (20) Unclassified report

DE (23) *Radar scanning, *Airport radar systems, *Cost analysis
Operational effectiveness, Passenger aircraft, Instrument flight,
Runways, Visibility, Ground vehicles, Sunset, Visual flight rules,
Trade off analysis, Costs, Benefits

ID (25) ASDE(Airport Surface Detection Equipment)

AB (27) This report develops establishment criteria for Airport Surface
Detection Equipment (ASDE-3) radar. ASDE's operational effectiveness
must be considered primarily during periods of instrument flight rule
(IFR) low visibility and during the busy hours after sunset when the
visibility conditions are visual flight rule (VFR). Controllers rarely
refer to ASDE during the daylight hours when the entire airport is
visible, and most indicate this would be the case regardless of the
type and quality of the equipment. However, during periods of reduced
visibility ASDE can assist the controllers by providing increased
safety in the movement of aircraft while also expediting departures.
Arrival rate is also aided under the same circumstances by providing
positive assurance of nonoccupancy of runways by ground vehicles as
well as aircraft. This analysis is the basis for the ASDE criteria that
are published in Airway Planning Standard Number One. Based on a
benefit versus cost analysis, the following establishment criteria have
been developed: The airport has a Category III runway; or The airport

has 180,000 or more annual itinerant operations, of which 100,000 or more are annual certificated route air carrier operations. (Author)

AN (1) AD-A018 034/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Airborne Measurements of VOR/Localizer Signal Strength and Desired to Undesired Signal Ratios. Volume II. Love Field, Dallas, Texas: Westmoreland Field, Latrobe, Pa.; 8-Loop, V-Ring and Twin T Localizer Antenna Types.

DN (9) Final rept.

AU (10) Everhart, Robert E.

RD (11) Nov 1975

PG (12) 140 Pages

RS (14) FAA-RD-75-165-2

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS, *RADIO RANGES, *RADIO SIGNALS RADIO NAVIGATION, ANTENNA ARRAYS, FIELD INTENSITY, MEASUREMENT, AIRPORTS, TEXAS, PENNSYLVANIA

ID (25) DOT/4IZ/ID

AB (27) The report contains the results of airborne measurements of signal strengths and select facility flyability recordings at Love Field, Dallas, Texas and Westmoreland Field, Latrobe, Pa. These measurements were conducted on three types of ILS arrays. Tests were conducted before and after conversion from 8-Loop to the specialized array by FAA flight inspection/facility installation teams.

AN (1) AD-A020 549/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) An Analysis of Aviation Safety Information.

DN (9) Final rept.

AU (10) Edwards, Carolyn

RD (11) Nov 1975

PG (12) 42 Pages

RS (14) FAA-MS-76-1

RC (20) Unclassified report

DE (23) *Aviation safety, *Aviation accidents

Statistical analysis, Casualties, Aeronautics, Civil aviation, Aircraft ID (25) Data sources, DOT/4DZ/DA, DOT/5A

AB (27) The report contains an analysis of accident data used for measuring aviation safety. Different accident data bases (NTSB, FAA) are analyzed to determine the effect of discrepancies on the use of accident statistics. Results of the analysis show that there are no statistically significant differences in the data sources. Therefore, for analytical purposes, the results using either source of data, would be the same within a specified confidence interval.

AN (1) AD-A021 519/XAG

FG (2) 010400

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION MEDICINE

TI (6) Pilot Performance and Heart Rate during In-Flight use of a Compact Instrument Display.

DN (9) Final rept.

AU (10) Hasbrook, A. Howard

Rasmussen, Paul G.

Willis, David M.

RD (11) Nov 1975

PG (12) 17 Pages

RS (14) FAA-AM-75-12

PJ (16) FAA-AM-D-75-PHY-44

RC (20) Unclassified report

DE (23) *INSTRUMENT PANELS, *PILOTS

DISPLAY SYSTEMS, AVIATION SAFETY, PERIPHERAL VISION,

PERFORMANCE(HUMAN), AVIATION MEDICINE, STRESS(PHYSIOLOGY), HEART,

VISUAL PERCEPTION, INSTRUMENT DIALS, EYE MOVEMENTS, HUMAN

FACTORS

ENGINEERING, PULSE RATE

ID (25) *Heart rate

AB (27) Instrument panels in many general aviation aircraft are becoming increasingly crowded, presenting the pilot with an instrument scanning problem. Because most aircraft instruments require use of central (foveal) vision, the pilot must look directly at each instrument to obtain needed information, taking time that may not be available during an instrument approach to published minimums. It was thought that the problems of adequate scanning of the instruments might be alleviated by reducing and changing the size of certain instruments and utilizing the pilot's peripheral vision. An in-flight study of pilot performance was

conducted while using an experimental instrument display. The display was used in flight by low-time and high-time professional pilots. The major findings of this study indicate that pilot performance with the high-contrast instrument display, which employs a vertical and horizontal format and occupies substantially less space than conventional instruments, is equal to pilot performance with conventional instruments, in spite of little familiarization time and without regard to pilot experience. No difference in stress (as measured by heart rate) was evident between the experimental and conventional displays. Subjective reaction of the pilot-subjects to the new type display was favorable. Panel space requirements can be reduced by at least 25 percent by use of the design concepts outlined in this study. (Author)

AN (1) AD-A021 520/XAG

FG (2) 061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Effects of Dextroamphetamine on Physiological Responses and Complex Performance during Sleep Loss.

DN (9) Final rept.

AU (10) Higgins,E. A.

Chiles,W. D.

McKenzie,J. M.

Iampietro,P. F.

Vaughan,J. A.

RD (11) Nov 1975

PG (12) 17 Pages

RS (14) FAA-AM-75-14

PJ (16) FAA-AM-A-74-PHY-65

RC (20) Unclassified report

DE (23) *Amphetamines, *Psychotropic agents, *Sleep

Performance(Human), Sleep, Physiological effects, Males, Steroids, Body temperature, Heart, Urine, Catecholamines, Fatigue, Proficiency,

Aviation medicine, Temperature, Rectum, Alertness

ID (25) Heart rate

AB (27) On two separate occasions, performance of 10 male subjects was measured on the Civil Aeromedical Institute Multiple Task Performance Battery at 4-hour intervals for a period of 24 hours without sleep. Each subject received a capsule at 4-hour intervals beginning at 2000. On one occasion, the first three doses contained 5 mg each of dextroamphetamine sulfate followed by placebos for the remaining three

capsules. On the other occasion, all capsules were placebos. Results of the experiment demonstrated that the dextroamphetamine sulfate sustained a high level of proficiency and alertness and delayed the effects of fatigue for 8 to 12 hours after the ingestion of the third and final drug capsule. Heart rate, rectal temperature, and urinary excretion rates of catecholamines were elevated with this drug. These increases could support the enhancement of proficiency and alertness demonstrated with amphetamines. Neither the subjects' feelings of fatigue nor the accuracy of their estimates of performance capabilities differed significantly in these two test conditions. (Author)

AN (1) AD-A021 836/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Functional Strength of Commercial Airline Stewardesses

AU (10) Raynolds,Herbert M.

Allgood,Mackie A.

RD (11) Nov 1975

PG (12) 15 Pages

RS (14) FAA-AM-75-13

PJ (16) FAA-AM-B-73-PRS-48

RC (20) Unclassified report

DE (23) *Strength(Physiology), *Aviation medicine

Anthropometry, Human factors engineering, Civil aviation, Females

ID (25) *Stewardess

AB (27) Data from 13 body measurements and 4 strength tests on 152 female flight attendants are reported herein. The stewardesses are taller (x bar = 165.8 cm) and lighter (x bar = 54.6 kg) than the corresponding age in the civilian population. The strength tests are reported as the average plateau, maximum force, and pound-second force for a two-handed push (110 cm from floor), leg lift (25 cm from floor), back lift (50 cm from floor), and arm lift (100 cm from floor). There are no comparable data in the literature; thus, these data can provide a general guideline as to the maximum strength capabilities of the on-line airline stewardess.

AN (1) AD-A026 224/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIR TRAFFIC SERVICE

TI (6) Performance Measurement System for Major Airports.

DN (9) Final rept.

AU (10) Woods, Bobby J.
Tobiason, Allan R.

RD (11) Nov 1975

PG (12) 270 Pages

RC (20) Unclassified report

DE (23) *Air traffic control systems

Performance, Performance(Engineering), Standards, Airports,
Measurement, Indexes, Weather

ID (25) *Airport capacity, Engineered performance standard

AB (27) This document summarizes the findings and implemented version of the Air Traffic Control Performance Measurement System (PMS) for major airports. Airports covered are Atlanta Hartsfield, Boston Logan, Cleveland Hopkins, Washington National, Denver Stapleton, Dallas Fort Worth Regional, Newark International, John F. Kennedy International, Los Angeles International, LaGuardia, Miami International, O'Hare International, Philadelphia International, Pittsburgh Greater, San Francisco International and St. Louis Lambert. PMS uses as its standard of measure a quantitatively derived version of airport capacity termed an Engineered Performance Standard (EPS). (Author)

AN (1) AD-A028 093/XAG

**FG (2) 010500
040200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

TI (6) Ground-Based Warm Fog Dispersal Systems - Technique Selection and Feasibility Determination with Cost Estimates.

DN (9) Final rept. Aug 73-Nov 75.

RD (11) Nov 1975

PG (12) 78 Pages

RS (14) FAA-RD-75-126

PJ (16) FAA-081-461-034

RC (20) Unclassified report

NO (21) Report of the FAA Fog Dispersal System Task Team.

DE (23) *International airports, *Fog dispersal

Weather modification, Thermal radiation, Air traffic, Feasibility studies, Energy consumption, Cost estimates, California

ID (25) Los Angeles International Airport

AB (27) This engineering study determines the feasibility of and prepares a conceptual design for a ground-based warm fog dispersal system at a

selected airport which has a high frequency of fog and a large air traffic volume that is adversely affected by fog. Los Angeles International Airport (LAX) was selected as the airport for study. The study considers and includes a brief review of warm fog dispersal mechanisms. The results indicate that heat is presently the only reliable technique for warm fog dispersal. Two methods of applying heat to fog are examined in detail, namely, the Thermokinetic and Modified Passive Thermal. Engineering costs estimates are developed. The results of the study indicate that both systems would be cost-effective at Los Angeles International Airport. For improving the visibility in fog to CAT 2 minimums, the 12-year benefit-to-cost ratio of the Thermokinetic Fog Dispersal System which uses natural gas for fuel is 8.7 to 1 while the Modified Passive Thermal Fog Dispersal System has a ratio of 4.8 to 1. The study concludes that a Thermal Fog Dispersal System at LAX is both feasible and cost effective.

AN (1) AD-A030 502/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

TI (6) Airborne Measurement of VOR/Localizer Signal Strength and Desired to Undesired Signal Ratios. Volume I. VOR and Localizer Free Space Interactions, Chickasha, Oklahoma.

DN (9) Final rept.

AU (10) Everhart, Robert E.

RD (11) Nov 1975

PG (12) 112 Pages

RS (14) FAA-RD-75-165-1

RC (20) Unclassified report

NO (21) See also Volume 2, AD-A018 034.

DE (23) *Radio navigation, *Instrument landings

Radio ranges, Antenna arrays, Antenna radiation patterns, Field intensity, Measurement, Airports, Texas, Oklahoma, Pennsylvania

ID (25) Love Field, Westmoreland Field

AB (27) This report contains the results of airborne tests to obtain VHF Navaid signal strength measurements and also facility flyability recordings with two different Localizer and VOR Facility spacings. The tests were conducted with the VOR and Localizer transmitters on adjacent-channels. The data presented are measurements of the signal strengths of the facilities examined as well as crosspointer deviation and flag currents. Volume I -VOR and Localizer Free Space Interactions Chickasha, Oklahoma. Volume II -Love Field Dallas, Texas, Westmoreland

Field Latrobe, Pa., 8-Loop, V-Ring and Twin-T Localizer Antenna Types.
(Author)

AN (1) AD-A015 823/XAG

**FG (2) 170703
250300**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

**TI (6) Integrated National Airspace Communication System (INACS) for the
Support of Air Traffic Control Operations in the 1980s and 1990s.
Program Planning and Formulation. Phase I Program Plan.**

RD (11) 01 Oct 1975

PG (12) 32 Pages

RS (14) FAA-INACS-061-221-P1

RC (20) Unclassified report

NO (21) See also AD-A015 824.

DE (23) *Communication and radio systems, *Air traffic control systems
Integrated systems, Planning

ID (25) INACS(Integrated National Airspace Communication System), Integrated
national airspace communication system, DOT/4HZ/HD, DOT/4IZ/ID

AB (27) The state-of the-art in communications technology offers opportunities
for a substantial reduction in total FAA communications recurring costs
together with a significant improvement in overall communications
operational flexibility, reliability and service. An integrated
national system, which provides both voice and data communications for
all FAA operational facilities and the attendant ATC support functions,
can save an estimated 100 million dollars per year in the FAA annual
communications budget.

AN (1) AD-A017 866/XAG

**FG (2) 010600
170703**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
POLICY**

**TI (6) IFR Aircraft Handled Forecast by Air Route Traffic Control Center,
Fiscal Years 1976-1987.**

RD (11) Oct 1975

PG (12) 48 Pages

RS (14) FAA-AVP-75-11

RC (20) Unclassified report

NO (21) See also report dated Sep 75, AD-A017 095.

DE (23) *Air traffic, *Instrument flight, *Forecasting

Civil aviation, Air traffic control terminal areas, Statistical
distributions, Military aircraft, Regions, Routing, Management
information systems, Planning, Budgets

ID (25) DOT/2A, DOT/5L, Instrument flight rules

AB (27) The report presents the forecasts of Instrument Flight Rule (IFR)
aircraft handled by FAA air route traffic control centers (ARTCC). It
serves as a base for the FAA planning and budget process in determining
future requirements for facilities, equipment and manpower. The
forecasts show that total aircraft handled will increase from 23.6
million in FY 1975 to 39.4 million in FY 1987. These national total
numbers along with those for several interim years are broken down
by FAA region and by each air route traffic.

AN (1) AD-A019 154/XAG

**FG (2) 010500
120500
120600
120800**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
SYSTEMS**

ENGINEERING MANAGEMENT

TI (6) An Efficiency Study of the En Route System Support Facility.

DN (9) Final rept.

AU (10) Broglio, Carlo J.

RD (11) Oct 1975

PG (12) 153 Pages

RS (14) FAA-EM-75-9

RC (20) Unclassified report

DE (23) *Computer applications, *Computer programming, *Central processing
units

Airports, Scheduling, Monitors, Systems analysis, New Jersey

ID (25) DOT/4IZ/IA, DOT/4IZ/ID, *Facilities management, *Computer performance
evaluation, Computer program reliability, Computer program maintenance,
Operating systems(Computers), Atlantic City(New Jersey)

AB (27) This report presents an in-depth analysis of the FAA's computer test
facility at Atlantic City, New Jersey. The main objective of the study
was to improve the utilization efficiency of that facility. The study
presents eleven problems of the current facility operation and presents
twenty-four recommendations for solving these problems. The problems
range from the lack of a clear definition of the facilities functional
relationship, to the rest of the FAA's organization to a lack of proper
software production and maintenance tools, to a hands-on form of
operation. The report describes: some improved software test tools; a

multi-computer operating system; a full description of an organizational structure for managing the facility; and an extensive discussion of scheduling techniques for the computer complex.

AN (1) AD-A021 518/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Effects of a 12-Hour Shift in the Wake-Sleep Cycle on Physiological and Biochemical Responses and on Multiple Task Performance.

DN (9) final rept.

AU (10) Higgins, E. A.

Chiles, W. D.

McKenzie, J. M.

Iampietro, P. F.

Winget, C. M.

RD (11) Oct 1975

PG (12) 28 Pages

RS (14) FAA-AM-75-10

PJ (16) FAA-AM-B-73-PHY-67

RC (20) Unclassified report

DE (23) *Circadian rhythms, *Sleep

Biological rhythms, Stress(Physiology), Aviation medicine, Body temperature, Temperature, Rectum, Urine, Catecholamines, Heart, Fatigue(Physiology), Electrolytes, Steroids, Performance(Human), Wake, Electrolytes(Physiology), Physiological effects, Diurnal variations, Response(Biology)

ID (25) Heart rate

AB (27) Fifteen male paid volunteers (ages 20 to 28) were studied in three groups of five each. The first 4 days of the experiment they slept nights (2230 to 0600) and worked days. On the fifth night, they slept only 3 hours (2100 to 2400) before starting a 10-day period in which the wake-sleep cycle was altered by 12 hours. According to the subjective fatigue index, the total fatigue for the awake periods was not significantly changed; however, the times within days for greatest fatigue were altered and 9 days were required for a complete reversal of the daily pattern. From shortest to longest mean rephasal times, these were: heart rate, norepinephrine, epinephrine, potassium, sodium, internal body temperature, and 17-ketogenic steroids. Performance data based on the Civil Aeromedical Institute Multiple Task Performance Battery suggest the following: (1) There was evidence of diurnal variation during the preshift period. (2) There were decrements

on the day of the shift following the short sleep period. (3)

Performance during the first 3 days following the shift was relatively high for most of the day but was relatively poor in the final session of the day. (4) Performance on the fourth through sixth postshift days was average or above average for the experiment with relatively small variations among the five test sessions per day. (5) Performance on the seventh through ninth postshift days was below average for the experiment and showed some evidence of a return to a diurnal cycling pattern with a new peak period of performance that reflected the 12-hour shift in the wake-sleep schedule.

AN (1) AD-A024 756/XAG

FG (2) 230400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Earplug Rankings Based on the Protector-Attenuation Rating (P-AR)

AU (10) Tobias, Jerry V.

RD (11) Oct 1975

PG (12) 65 Pages

RS (14) FAA-AM-75-11

PJ (16) FAA-AM-B-74-PSY-51, FAA-AM-D-75-PSY-55

RC (20) Unclassified report

NO (21) Supersedes Rept. no. FAA-AM-73-20, AD-779 552.

DE (23) *Ear protectors

Noise reduction, Ratings, Hearing, Performance(Engineering), Attenuators

ID (25) Earplugs

AB (27) Forty-five attenuation spectra for earplugs were classified according to a simplified method designed to produce single-number ratings of noise reduction. The rating procedure was applied to the mean attenuation scores, to mean-minus-one-standard-deviation scores, and to mean-minus-two-standard-deviations scores. The reporting of all three numbers seems to give the fairest indication of an earplug's value in controlling hearing damage in noise-exposed populations. The tests are described and ranked.

AN (1) AD-A110 347/XAG

FG (2) 010600

050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION

SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 2, 1 Jan-30 Jun 75.

RD (11) 06 Oct 1975

PG (12) 26 Pages

RS (14) FAA-ACS-82-2

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Civil aviation, *Security, *Crimes

Transport aircraft, Bombs, Threats, Sabotage, Crisis management, Strategy, Training, Security personnel, Law enforcement, Regulations, Threat evaluation, Inspection, Passengers, Detection, Weapons, Explosives detection, Aviation safety, Operational effectiveness

ID (25) Hijacking

AB (27) The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A014 644/XAG

FG (2) 040200

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Effect of Temperature and Humidity on Aircraft Noise Propagation.

DN (9) Final rept.

AU (10) McCollough,'JB'

True,Harold C.

RD (11) Sep 1975

PG (12) 106 Pages

RS (14) FAA-RD-75-100

RC (20) Unclassified report

DE (23) *Aircraft noise, *Sound transmission

Peak values, Atmospheric temperature, Humidity, Acoustic measurement, Intensity, Atmospheres, Temperature inversion, High altitude, Low altitude, Thrust, Absorption, Lapse rate, Layers, Acoustic properties, Numerical methods and procedures, Corrections, Data reduction, Jet transport planes, Weather, Spectrum analysis, Jet engine noise, Test methods, Standardization, Meteorological data

ID (25) DC-9 aircraft

AB (27) This report presents the results of a test program conducted to measure the effect of varying meteorological conditions on aircraft flyover noise levels. Detailed temperature and humidity data were obtained using an instrument system carried by a light aircraft. High and low altitude inversions as well as standard lapse rate atmospheres were investigated. Level flyovers were conducted, using a DC-9-10 aircraft operated at a thrust of 6,000 lbs., as a constant noise source. Measured noise levels varied up to 4 EPNdB depending upon the absorptive properties of the atmosphere. Several analysis procedures were investigated in an effort to correct noise data for weather conditions. Weather correction procedures based on single point meteorological data were inadequate to normalize, to reference conditions, the noise data for those conditions with non-uniform temperature and humidity profiles. A layered analysis procedure, however, normalized all flyover noise levels to those levels taken under near reference conditions. The layered analysis procedure incrementally adjusts the measured peak spectra based on the acoustic absorption in each increment. These results indicated that noise certification testing under non-uniform temperature and humidity conditions could, if allowed, be conducted provided that frequent and detailed meteorological data is available and the layered weather correction procedure is used.

AN (1) AD-A015 824/XAG

FG (2) 170703

250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Integrated National Airspace Communication System (INACS) for the Support of Air Traffic Control Operations in the 1980s and 1990s. System Concept.

RD (11) 08 Sep 1975

PG (12) 32 Pages

RS (14) FAA-INACS-061-221-SC

RC (20) Unclassified report

NO (21) See also Phase 1, AD-A015 823.

DE (23) *Communication and radio systems, *Air traffic control systems Systems engineering, Integrated systems

ID (25) INACS(Integrated National Airspace Communication System), Integrated national airspace communication system, DOT/4HZ/HD, DOT/4IZ/ID

AB (27) The document introduces the concept of an integrated communications approach to meet total FAA operational communications requirements projected for the 1980s and beyond. As a concept, this integrated approach differs from the historical method of satisfying FAA's

communications needs by the acquisition or development of dedicated facilities and networks which are designed to serve specific categories of users and which perform specific and dedicated communications functions for these users. State-of-the art communications technology appropriately applied to an integrated system offers opportunities for a substantial reduction in projected total FAA communications recurring costs together with a significant improvement in overall communications operational capability, flexibility and reliability.

AN (1) AD-A016 277/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) To See or Not to See: Visual Acuity of Pilots Involved in Midair Collisions

AU (10) Ryan, Leonard C.
Gerathewohl, S. J.
Mohler, Stanley R.
Booze, Charles F., Jr

RD (11) Sep 1975

PG (12) 6 Pages

RS (14) FAA-AM-75-5

RC (20) Unclassified report

DE (23) *Aviation accidents, *Visual acuity, *Pilots

Records, Surveys, Comparison, Correlation techniques, Collisions, Classification

ID (25) Midair collisions

AB (27) The medical records of airmen involved in midair collisions from 1970 through 1973 were reviewed and compared with two other groups of pilots: (1) pilots involved in other types of accidents and (2) pilots without any accident records. There is nothing in the results to indicate that the pilots with visual corrections are a greater risk.

AN (1) AD-A016 666/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Radar Enhancement of Small Aircraft in the Air Traffic Control (ATC) System.

DN (9) Final rept.

AU (10) Turnbull, Donald H.

RD (11) Sep 1975

PG (12) 425 Pages

RS (14) FAA-RD-75-98

RC (20) Unclassified report

DE (23) *Radar

Aircraft, Air traffic control systems, Radar cross sections, Performance(Engineering), Active systems, Passive systems, Radar reflections, Transponders

ID (25) ATCRBS(Air Traffic Control Radar Beacon Systems), Air traffic control radar beacon systems, DOT/4IZ/IE

AB (27) An investigation was undertaken to develop and determine the practicality of small aircraft radar enhancement devices. This report discusses the detection capability of present radars as well as an analysis and evaluation of passive radar enhancement devices and active radar enhancement devices. The report concludes that passive enhancement devices are not practical and that active enhancement devices are too costly when compared to the existing Air Traffic Control Radar Beacon System (ATCRBS) transponders.

AN (1) AD-A017 095/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) Aviation Forecasts. Fiscal Years 1976-1987.

RD (11) Sep 1975

PG (12) 76 Pages

RS (14) FAA-AVP-75-7

RC (20) Unclassified report

NO (21) See also report dated Sep 74, AD-A002 618.

DE (23) *Civil aviation, *Forecasting

Airports, Towers, Air traffic control systems, Statistical analysis, Transport aircraft, Military aircraft, Planning, Budgets, Fuel consumption

ID (25) Fuel prices, Air taxi, DOT/2A, DOT/5F

AB (27) This report contains the latest Federal Aviation Administration forecast of measures of workload and activity at towered airports, air route traffic control centers, and flight service stations for Fiscal Years 1976 to 1987. The forecasts were made for the four major users of the system; air carriers, air taxi, general aviation and the military. The report has been prepared to meet the budget and planning needs of

the various offices and services of FAA for data concerning future trends in aviation activity. This report reflects the impact on aviation activity of a more rapid rate of price increase, especially for fuel, and a slower rate of real income growth than had been assumed in previous forecasts.

AN (1) AD-A017 622/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND P LANS

TI (6) Military Aviation Forecasts, Fiscal Years 1976-1987.

RD (11) Sep 1975

PG (12) 39 Pages

RS (14) FAA-AVP-75-12

RC (20) Unclassified report

NO (21) See also AD-A017 095.

DE (23) *MILITARY AIRCRAFT, *AIR TRAFFIC, *FORECASTING

FEDERAL BUDGETS, TERMINAL FLIGHT FACILITIES, STATISTICAL DATA, MANAGEMENT PLANNING AND CONTROL, MATHEMATICAL PREDICTION, INSTRUMENT

FLIGHT, TIME

ID (25) DOT/2A, DOT/3B, National aviation system, Flying time

AB (27) This report presents forecasts of military air traffic activity at facilities operated by the Federal Aviation Administration for fiscal years 1976 through 1987. These data are required for proper planning to meet the demands which the United States military services will place on the National Aviation System. The report is used as a guide in determining the need for larger or additional FAA facilities, for changes or consolidations, and for possible increases or decreases in personnel at existing facilities.

AN (1) AD-A017 932/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Concorde Supersonic Transport Aircraft. Volume II. Substantive Comments.

DN (9) Final environmental impact statement.

RD (11) Sep 1975

PG (12) 612 Pages

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A018 088.

DE (23) *Supersonic transports, *Environments, *Airports

Public opinion, Mail, New York, Virginia, Noise pollution, Vibration, Air pollution, Psychophysics

ID (25) *Environmental impact statements, DOT/2A, DOT/5H, DOT5B, DOT/5C

AB (27) Volume 2 contains verbatim copies of substantive written comments received on the draft environmental impact statement regarding amendment of U.S. airport operations specifications. This action would be necessary to allow a British-French supersonic transport aircraft operation to be established at two U.S. airports.

AN (1) AD-A018 088/XAG

FG (2) 130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Concorde Supersonic Transport Aircraft. Volume I.

DN (9) Final environmental impact statement.

RD (11) Sep 1975

PG (12) 441 Pages

RC (20) Unclassified report

DE (23) *Supersonic transports, *Environments, *Airports

Decision making, New York, Virginia, Noise pollution, Stratosphere, Ozone, Solar radiation, Ultraviolet radiation, Foreign policy

ID (25) *Environmental impact statements, John F Kennedy International Airport, Dulles International Airport, DOT/2A, DOT/4GZ/GB, Alternatives

AB (27) The pending action is a decision on the amendment of the supersonic transport aircraft operations specifications of British Airways and Air France to permit these carriers to conduct limited commercial service with the Concorde to John F. Kennedy International Airport (JFK) in New York, and Dulles International Airport (IAD) in Virginia.

AN (1) AD-A020 679/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Stress in Air Traffic Controllers: Comparison of Two Air Route Traffic Control Centers on Different Shift Rotation Patterns.

DN (9) Final rept.

AU (10) Melton, C. E.

Smith, R. C.

McKenzie, J. M.

Saldivar, J. T.

Hoffmann, S. M.

RD (11) Sep 1975
PG (12) 14 Pages
RS (14) FAA-AM-75-7
RC (20) Unclassified report
DE (23) *Stress(Psychology), *Stress(Physiology), *Air traffic controllers
Sleep, Cycles, Work, Personnel, Rotation, Response(Biology), Urine,
Fatigue(Physiology)
AB (27) Stress in 23 air traffic controllers (ATCS) at Atlanta Air Route
Traffic Control Center (ATL) on the straight 5-day shift rotation
schedule was compared with stress in 23 ATCS's on the 2-2-1 shift
rotation schedule at Fort Worth Air Route Traffic Control Center (FTW).
Stress in six other FTW ATCS's on the 5-day schedule was compared to
stress in their 23 cohorts on the 2-2-1 schedule. Stress estimates
were made from urinary levels of 17-ketogenic steroids (st),
epinephrine (e), and norepinephrine (ne).

AN (1) AD-A024 542/XAG
FG (2) 130200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
SYSTEM PLANS
TI (6) Technical Assistance for Transportation Planners in the U.S. Department
of Transportation.
DN (9) Final rept.
AU (10) Williams, Germaine
Ensrud, Norman
Maring, Gary
Paulaus, Norman
RD (11) Sep 1975
PG (12) 74 Pages
RS (14) FAA-ASP-76-4
RC (20) Unclassified report
DE (23) *Transportation, *Technology transfer
Planning, Air transportation, Rail transportation, Land transportation,
Training, Scientific research
ID (25) *Technical assistance, Project management, Multimodal transportation
AB (27) The report evaluates the adequacy of existing technical assistance
efforts aimed at transportation planners in the Department of
Transportation and makes some recommendations on how the assistance can
be improved. A model of a good technical assistance program with two
basic components is proposed: (1) A structure consisting of the
mechanisms necessary to transmit the technical expertise available to
the users and to obtain feedback from them on the program; and (2) the

substantive content of the program including the reports and studies
generated by research and development efforts and other handbooks,
guidelines, etc., of interest to the identified users. The conclusion
with respect to structural adequacy is that components of a good
technical assistance program are not found clearly identified in UMTA,
FAA, or FRA. FHWA does have the necessary structural components of a
good technical assistance program, but some improvement could be made
in expanding the client group for their assistance. The conclusion with
respect to content adequacy is that there are some gaps in the
information available from FAA and FRA and that these gaps are not
being addressed by the ongoing R and D.

AN (1) AD-A025 254/XAG
FG (2) 050600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE
TI (6) An Evaluation of the Effectiveness of the FAA Management Training
School
AU (10) Smith, Roger C.
Rana, Barbara
Taylor, Deborah K.
RD (11) Sep 1975
PG (12) 48 Pages
RS (14) FAA-AM-75-9
PJ (16) FAA-AM-B-72-PSY-39, FAA-AM-B-73-PSY-39
RC (20) Unclassified report
DE (23) *Management training
Assessment, Personnel development, Effectiveness, Questionnaires,
Courses(Education), Supervisors
ID (25) Federal aviation administration
AB (27) This report covers two aspects of an agency-wide assessment of the FAA
Management Training School (MTS) program. The first part of the report
considers the evaluation of MTS by approximately 10% of the Supervisory
and Managerial Training Course graduates. It was found that supervisors
and managers held similar views of MTS: Most felt that the program had
been useful in helping them to meet the demands of their
supervisory/managerial positions. The responses of the graduates
indicated areas in which improvement could be effected within the MTS
framework. The second part of the report presents the findings
concerning the impact of MTS on the behavior of course graduates. It
was found that MTS training resulted in an increase in desirable
on-the-job activities of MTS graduates, as judged by the graduates

themselves, their supervisors, and their employees. Those who had attended MTS entered training with supervisory/managerial skills somewhat below the level of those of the individuals who had not yet attended and they returned to perform at a somewhat higher level than those without the MTS experience.

AN (1) AD-A027 835/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Commuter Air Carrier Operators as of September 1975.

DN (9) Annual rept. for period ending 30 Sep 75

AU (10) Thompson, George E.

RD (11) 30 Sep 1975

PG (12) 58 Pages

RC (20) Unclassified report

DE (23) *Commercial aircraft, *Cargo aircraft, *Passenger aircraft Flight, Aircraft seats, Statistical data, Mission profiles, Flight paths

ID (25) *Commuter air carriers

AB (27) This report presents data received from commuter air carrier operators who reported activity data to the Civil Aeronautics Board during the quarter ending September 30, 1975. Tables have been prepared from extractions reported on CAB Form 298-C (Schedule A-1) Report of Aircraft Operated, and CAB Form 298-C (Schedule T-2) Report of Flights Operated. (Author)

AN (1) AD-A038 723/XAG

FG (2) 120400

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY

TI (6) UG3RD Baseline and Implementation Scenario.

DN (9) Final rept.

RD (11) 30 Sep 1975

PG (12) 197 Pages

RS (14) FAA-AVP-77-19

RC (20) Unclassified report

DE (23) *Air traffic control system analysis, *Operations research Third generation computers, User needs, Forecasting, Scheduling, Terminal flight facilities, Commercial aviation, Military aircraft,

Domestic, Foreign, Airport control towers, Airport radar systems, National transportation system, International relations, Regulations, Economics

AB (27) The Baseline and Implementation Scenario Describes the environment within which the Upgraded Third Generation (UG3RD) Air Traffic Control System components may be expected to operate. This environment is described by such parameters as forecast demands, aircraft characteristics and distribution, and airport configurations and locations. It also includes considerations of implementation such as establishment criteria, funding services, establishment strategies, and scheduling. (Author)

AN (1) AD-A020 680/XAG

FG (2) 061000

061500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Interaction Between Marihuana and Altitude on a Complex Behavioral Task in Baboons

AU (10) Lewis, Mark F.

Ferraro, Douglas Peter

Mertens, Henry W.

Steen, Jo Ann

RD (11) Aug 1975

PG (12) 8 Pages

RS (14) FAA-AM-75-6

RC (20) Unclassified report

DE (23) *Behavior, *Marijuana, *Hypoxia, *Stress(Physiology)

Baboons, Laboratory animals, Experimental data, Cannabis, Physiological effects, Altitude, Performance, Dosage, Work functions,

Response(Biology), Drugs

ID (25) Animal behavior

AB (27) Marihuana, or its principal active ingredient, delta-9-tetrahydrocannabinol (delta9-THC), impairs performance on complex behavioral tasks in animals and man. Although there exists some evidence that altitude-induced hypoxia potentiates the physiological effects of marihuana, the interaction between altitude and marihuana on behavioral tasks has not been established. Two baboons were trained to perform on a delayed matching-to-sample task at ground level and altitudes of 8,000 and 12,000 feet. The animals were orally administered doses of delta9-THC, ranging from 0.25 to 2.0 mg/kg, 2 hours prior to experimental sessions at each altitude. No effects on

accuracy of matching performance were observed for any of the drug doses or altitudes used. Amount of work output, as measured by number of trials completed and speed of responding, was not affected by delta9-THC at ground level but was markedly reduced by the higher drug doses at the 8,000- and 12,000-foot altitudes. This interaction suggests that the behavioral impairment produced by marijuana can be potentiated by hypoxia.

AN (1) AD-A025 426/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Physiological, Subjective, and Performance Correlates of Reported Boredom and Monotony while Performing a Simulated Radar Control Task

AU (10) Thackray, Richard I.

Bailey, J. Powell

Touchstone, R. Mark

RD (11) Aug 1975

PG (12) 12 Pages

RS (14) FAA-AM-75-8

PJ (16) FAA-AM-C-75-PSY-48

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Boredom

Stress(Psychology), Performance(Human), Heart, Humans, Males, Psychological tests, Simulation, Physiological effects, Attention, Response(Biology), Automation, Vigilance

AB (27) Forty-five male subjects performed a simulated air traffic control radar task for 1 hour. Subjects were equally divided into three time-of-day groups and tested at 1000, 1300, and 1530. The subject's task was to respond as rapidly as possible to infrequent changes in alphanumeric symbols. Physiological recordings of blood pressure, oral temperature, skin conductance, body movement, heart rate and heart-rate variability, and performance measures of mean response latency and variability of response latencies were obtained. In addition, subjects rated their levels of boredom, monotony, irritation, attentiveness, fatigue, and strain at the beginning and end of the session. There were no differences between any of the time-of-day groups except in oral temperature, which was significantly higher in the afternoon than in the morning. Two extreme groups of eight subjects each were formed on the basis of their rated boredom and monotony and compared with respect to changes in each of the measures during the task period. The two groups differed significantly on several measures, with the high

boredom-monotony group showing greater increases in 'long response times,' heart-rate variability, and strain along with a greater decrease in attentiveness. The nature of the pattern associated with boredom and monotony suggests a pattern more closely related to attentional processes than to 'arousal.' The extreme groups did not differ on the Eysenck Extraversion Scale or the Zuckerman General Sensation Seeking and Boredom Susceptibility Scales. Possible reasons for the lack of relationship with these scales are discussed. (Author)

AN (1) AD-A011 088/XAG

FG (2) 010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) SRDS Technical Program Document, Fiscal Year 1976 Engineering and Development Approved Programs.

RD (11) Jul 1975

PG (12) 152 Pages

RC (20) Unclassified report

NO (21) See also report dated Jul 74, AD-781 358.

DE (23) *Air traffic control systems, *Air transportation, *Civil aviation

Systems engineering, Radar, Radar beacons, Navigation, Communication and radio systems, Landing aids, Aviation safety, Weather, Airports, Research management, Planning

ID (25) DOT/4IZ/ID

AB (27) The technical program document (TPD) contains research and technology resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, accomplishments, requirements, etc.

AN (1) AD-A013 351/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan-Program Structure and Objectives.

RD (11) 01 Jul 1975

PG (12) 45 Pages

RN (18) FAA-ED-00-C

RC (20) Unclassified report
NO (21) Supersedes report dated Jul 74, AD-783 186.
DE (23) *Civil aviation, *Systems engineering
Management planning and control, Performance, Simulation, Computer applications, Air traffic control systems, Radar equipment, Beacons, Navigation, Communications networks, Approach, Aircraft landings, All weather, Environmental protection, Safety, Airports
ID (25) Services, DOT/2A
AB (27) The Office of Systems Engineering Management (OSEM) has initiated an activity for the preparation of Program Plans covering the present twenty-one engineering and development programs within the Federal Aviation Administration (FAA). These plans are required to provide more detailed information on the objectives, goals, program structure, technical approach, resources, possible implementation, and a number of other aspects for each of these programs. This document presents an introductory background to the planning process, the objectives in each of the program areas, and an index of the plans, available or under preparation.

AN (1) AD-A015 871/XAG
FG (2) 010309
050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
POLICY

TI (6) **The General Aviation Industry. --An Overview--.**

DN (9) Staff study rept.

AU (10) Henry, Thomas F.
Froehlich, Maryann

RD (11) Jul 1975

PG (12) 64 Pages

RS (14) FAA-AVP-75-4

RC (20) Unclassified report

DE (23) *Aircraft industry

United States, Commercial aircraft, Jet transport planes, Transport aircraft, Utility aircraft, Manufacturing, Industrial production, Fuel consumption, Aviation fuels, Jet engine fuels, Cost analysis, Aviation safety, Industrial personnel, Industrial plants, Air traffic, Air Transportation, Statistical analysis, Commerce, Government(Foreign)

ID (25) Balance of payments, Exports

AB (27) This report presents background information and statistics on various aspects of the general aviation (G.A.) industry. The report documents the impressive growth of the general aviation fleet, particularly since

the 1960's, and illustrates recent trends in G.A. aircraft types and user categories. It emphasizes that G.A. activities are becoming increasingly important in the National Aviation System of Airports and Airways and that this implies increased FAA workload. The report also discusses trends in aircraft production and export and the relative market shares of the producers of G.A. aircraft, as well as the industry's overall contribution to the U.S. balance of payments. The discussion of energy considerations suggests that the Arab oil embargo and subsequent increases in oil prices brought on by the pricing policies of the Organization of Petroleum Exporting Countries (OPEC) had minimal effects on G.A. activities. However, legislative proposals designed to impose substantial taxes on gasoline production or sale might have depressing effects on future G.A. activities. (Author)

AN (1) AD-A018 561/XAG

FG (2) 010600
170703
250400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) **Integrated National Airspace Communication System (INACS) for the Support of Air Traffic Control Operations in the 1980s and 1990s. Operational/Maintenance Requirements.**

RD (11) 11 Jul 1975

PG (12) 142 Pages

RS (14) FAA-INACS-011-221-OR

RC (20) Unclassified report

DE (23) *Communication and radio systems, *Air traffic control systems
Voice communications, Commercial aviation, Data links, Radio links, Microwave landing systems, Integrated systems, Operation, Maintenance, Requirements

ID (25) Federal aviation administration, DOT/4HZ/HD, DOT/4IZ/ID

AB (27) This document is intended to provide the operating/maintenance requirements for future National Airspace System communications system designs and developmental efforts, and the vehicle for discussion and coordination with the various policy planning, operating, maintenance, and engineering activities concerned with FAA Communications. Requirements submitted by Air Traffic and Airway Facilities Services have been used and augmented by inputs from SRDS, MITRE and the Computer Sciences Corporation. Communications requirements are established for all national airspace environments. This document provides the basic sets of requirements applicable to each of the environments and their subsets, i.e., voice/data air/ground communications, voice ground/ground communications and data

ground/ground communications. These requirements will be utilized to derive the detailed functional and design requisites to be incorporated in all Integrated National Airspace Communication System (INACS) specifications.

AN (1) AD-A020 857/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Special Air Safety Advisory Group Report to the Federal Aviation Administration.

RD (11) 30 Jul 1975

PG (12) 131 Pages

RS (14) FAA-AFS-1-76-1

RC (20) Unclassified report

DE (23) *Aviation safety, *Civil aviation

Assessment, Pilots, Performance(Human), Approach, Aircraft landings, Operation, Methodology, Ground support

ID (25) National aviation system, DOT/2 A, DOT/5 A, Retired airline pilots

AB (27) The FAA contracted with a group of experienced retired airline captains, the Special Air Safety Advisory Group, to make an independent evaluation of air carrier operations in the national aviation system to determine actions that can be taken to improve flight safety, with special emphasis on approach and landing problems. The report contains the findings and recommendations of the Special Air Safety Advisory Group and an appendix setting forth FAA's response to the report.

AN (1) AD-A015 870/XAG

FG (2) 010500

010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Airline Delay Trends, 1972 - 1973 Study of Block Time Delays Ground and Airborne for Scheduled Air Carriers. Volume I. Summary.

DN (9) Final rept.

AU (10) Horowitz,Seymour M.

RD (11) Jun 1975

PG (12) 136 Pages

RS (14) FAA-EM-74-11-Vol-1

RC (20) Unclassified report

DE (23) *Commercial aviation, *Delay, *Air traffic control systems, *Scheduling Time, Arrival, Flight paths, Airports, Data bases, Statistical data

ID (25) DOT/4IZ/Id

AB (27) Estimates of block time delays for the nation's domestic scheduled air carriers operating out of 20 major airports were determined from a data base recently made available by the CAB. This data base provides monthly averages of operational times, both airborne and on the ground, for all route segments receiving scheduled air carrier service, but the data in this report are limited to 325 route segments connecting with the 20 airports included in this study. Block time delays are those encountered from ramp to ramp on a route segment. Average monthly estimates of the delays for the airborne portion of the segment (wheels off to wheels on) are provided for a two year period from 1972 to 1973, and are categorized according to (1) route segment, (2) airline (3) aircraft type and (4) local scheduled arrival or departure time. Average monthly estimates of the ground portion of the route segment are categorized according to arrival and departure ground times at the 20 specific airport locations connecting the network of routes included in the study. Estimates of arrival and departure ground delays at specific airports are categorized further into Busy and Dull time intervals. (Author)

AN (1) AD-A019 221/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Airline Delay Trends, 1972 - 1973, Study of Block Time Delays Ground and Airborne for Scheduled Air Carriers. Volume II. Appendix.

DN (9) Final rept.

AU (10) Horowitz,Seymour M.

RD (11) Jun 1975

PG (12) 477 Pages

RS (14) FAA-EM-74-11-Vol-2

RC (20) Unclassified report

NO (21) See also Volume 1, AD-A015 870.

AL (22) Availability: Microfiche copies only.

DE (23) *Commercial aviation, *Delay, *Air traffic control systems, *Scheduling Time intervals, Arrival, Flight paths, Airports, Routing, Data bases, Statistical data, Data displays, Graphics, Tables(Data)

AB (27) Estimates of block time delays for the nation's domestic scheduled air carriers operating out of 20 major airports were determined from a data base recently made available by the CAB. This data base provides

monthly averages of operational times, both airborne and on the ground, for all route segments receiving scheduled air carrier service, but the data in this report are limited to the 325 route segments connecting with the 20 airports included in this study. Block time delays are those encountered from ramp to ramp on a route segment. Average monthly estimates of the delays for the airborne portion of the segment (wheels off wheels on) are provided for a two year period from 1972 to 1973, and are categorized according to (1) route segment, (2) airline, (3) aircraft type and (4) local scheduled arrival or departure time. Average monthly estimates of the ground portion of the route segment are categorized according to arrival and departure ground times at the 20 specific airport locations connecting the network of routes included in the study. Estimates of arrival and departure ground delays at specific airports are categorized further into Busy and Dull time intervals. (Author)

23

AN (1) AD-A020 682/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Air Traffic Activity, Fiscal Year 1975

AU (10) Thompson, George E.

Wilson, Patricia

RD (11) 30 Jun 1975

PG (12) 265 Pages

RC (20) Unclassified report

NO (21) See also report dated Mar 75, AD-A017 055.

DE (23) *Air traffic, *Civil aviation

Statistical data, Instrument flight, Instrument landings, Air traffic control terminal areas, Transport aircraft, Information systems, Operation, Military aircraft, Trends, Patterns

ID (25) Instrument flight rules, National airspace system, Services, DOT/2 A, DOT/5 L, Air taxis

AB (27) This report furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated airport traffic control towers (ATCTs), air route traffic control centers (ARTCCs), flight service stations (FSSs), combined station towers (CS/Ts), international flight service stations (IFSSs), and approach control facilities.

AN (1) AD-A013 343/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA CIVIL AEROMEDICAL INST

TI (6) Attitudes on En Route Air Traffic Control Training and Work: A Comparison of Recruits Initially Trained at the FAA Academy and Recruits Initially Trained at Assigned Centers.

AU (10) Mathews, John J.

Cobb, Bart B.

Collins, William E.

RD (11) May 1975

PG (12) 39 Pages

PJ (16) FAA-AM-B-73-PSY-43, FAA-AM-C-74-PSY-43

RN (18) FAA-AM-75-3

RC (20) Unclassified report

NO (21) See also AD-787 238.

DE (23) *Air traffic controllers, *Training, *Attitudes(Psychology) Questionnaires, Ratings, Attrition, Retention(General), Job satisfaction, Males, Females, Schools, Recruits

ID (25) Dropouts, DOT/4FZ/FA

AB (27) In this comparison, questionnaires concerning aspects of training-related and work-related attitudes were sent to 225 ATC trainees who represented groups of attritions and retentions in two En Route training programs; viz, programs that provided basic training at the FAA Academy and programs that provided basic training at the trainees' assigned facilities. Data from both groups generally support previous findings regarding sources of differences in work attitudes between sexes and between attrition-retention groups. The most frequent recommendations for change involved facility training and facility instructors; modifications in the pace of training were also recommended frequently.

AN (1) AD-A013 434/XAG

FG (2) 010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) 1974 U.S. Civil Airmen Statistics.

RD (11) May 1975

PG (12) 35 Pages

RC (20) Unclassified report

NO (21) See also report dated Jun 74, AD-783 753.

DE (23) *Civil aviation, *Flight crews

Statistical data, Pilots, Males, Females, Helicopters, Gliders,
Commercial aircraft, Transport aircraft

ID (25) *Pilot certificates, *Nonpilot certificates, *Airman certificates

AB (27) The 1974 U.S. Civil Airmen Statistics is the sixth edition of an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained by the Flight Services Technical Division, FAA Aeronautical Center, Oklahoma City, Oklahoma.

AN (1) AD-A016 161/XAG

FG (2) 150500

010200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC AVIATION FORECAST BRANCH

TI (6) Profiles of Scheduled Air Carrier Operations by State Length. Federal Aviation Administration Regions' Top 100 U.S. Airports. November 1, 1974.

RD (11) May 1975

PG (12) 343 Pages

RC (20) Unclassified report

NO (21) See also report dated Jan 73, N73-22207.

DE (23) *AIR TRANSPORTATION, *AIRPORTS

OPERATION, STATISTICAL DATA, SCHEDULING, REGIONS, ARRIVAL, TAKEOFF,
PASSENGER AIRCRAFT, TRANSPORT AIRCRAFT, DIURNAL VARIATIONS

ID (25) DOT/2A, DOT/3C

AB (27) The first section of this report provides data on total scheduled air carrier aircraft operations by trip length by hour of the day for Friday, November 1, 1974, for the top 100 airports within the 50 states of the United States and the District of Columbia. The second section of the report shows the same information for each of the 11 Federal Aviation Administration regions. The FAA regional information is for those airports in the region that are included in the top 100 airports.

AN (1) AD-A008 089/XAG

FG (2) 010300

250200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA AERONAUTICAL CENTER

TI (6) Federal Communications Commission Requirements for Avionic Equipment -Information Paper.

DN (9) Engineering rept.

AU (10) Davis, J. A.

RD (11) Apr 1975

PG (12) 33 Pages

RS (14) FAA-TR-AAC-213-11

PJ (16) FAA-75-788-130A

RC (20) Unclassified report

DE (23) *Avionics

Regulations, Transmitters, Receivers, Requirements, Emission,
Acceptability

ID (25) DOT/50, Federal Communications Commission

AB (27) The paper presents information to assist FAA Flight Standards personnel in answering questions from the aviation community on Federal Communications Commission (FCC) requirements for aircraft avionics equipment.

AN (1) AD-A010 266/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) An Overview of the FAA Engineering and Development Programs with Highlights of Fiscal Years 1975-1976.

RD (11) Apr 1975

PG (12) 31 Pages

RS (14) FAA-EM-75-4

RC (20) Unclassified report

NO (21) See also report dated Mar 74, AD-776 682.

DE (23) *Air traffic control systems, *Aviation safety, *Systems analysis,
*Airports

Management planning and control, Reviews, Automation, Radar beacons,
Microwave equipment, Collision avoidance, Wake

ID (25) Fatality reduction

AB (27) This document is intended to supplement and update the information presented in the FY 1974-1975 overview. The primary attention is given to highlights and accomplishments in FY 1975 and to expected progress and accomplishments in FY 1976. A new section describes engineering and development activities oriented to the FAA's primary objective of increased safety.

AN (1) AD-A011 077/XAG
FG (2) 010300
010600
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA FLIGHT
STANDARDS
TECHNICAL DIV
TI (6) Concepts in Safety Belt Testing.
DN (9) Final rept.
AU (10) Ross, James W., Jr
RD (11) Apr 1975
PG (12) 40 Pages
RS (14) FAA-TR-FS-75-782-120A
RC (20) Unclassified report
NO (21) Presented at the Business Aircraft Meeting of the Society of Automotive
Engineers, Wichita, Kansas, 8-11 April 1975, as SAE-750540.
DE (23) *Safety belts, *Reliability, *Aviation safety
Civil aviation, Harnesses, Retractable, Locking fastener devices,
Static tests, Dynamic tests, Acceleration, Aviation accidents, Test
equipment
ID (25) DOT/5A, DOT/4DZ/DA
AB (27) The purpose of the paper is to present concepts for more representative
testing of inertia reels and shoulder harness assemblies. These
concepts were explored as part of a study to determine design and
performance criteria appropriate for civil aircraft safety belts.

AN (1) AD-A014 041/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND
STATISTICS DIV
TI (6) Commuter Air Carrier Operators as of September 1974.
RD (11) Apr 1975
PG (12) 61 Pages
RC (20) Unclassified report
DE (23) *Air transportation, *Commercial aviation
Passenger aircraft, Cargo aircraft, Statistical data, Value, Seats,
Capacity(Quantity), Classification, Regions, Models, Operation
ID (25) Commuter airline industry, Common carriers, DOT/2A
AB (27) The Civil Aeronautics Board (CAB) in 1969, issued amendments to the
Economic Regulations for air taxi operators. One of these required all
air taxi operators to register before July 1, 1969, and annually
thereafter. Commuter air carriers as defined by CAB are operators who
perform, pursuant to published schedules, at least five round trips per
week between two or more points, or carry mail.

AN (1) AD-A015 087/XAG
FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE
TI (6) The Use of Vestibular Tests in Civil Aviation Medical Examinations:
Survey of Practices and Proposals by Aviation Medical Examiners
AU (10) Collins, William E.
Lennon, Amelia O.
Grimm, E. Jean
RD (11) Apr 1975
PG (12) 9 Pages
RS (14) FAA-AM-75-4
RC (20) Unclassified report
DE (23) *Vestibular apparatus, *Medical examination
Questionnaires, Ear, Aviation medicine, Civil aviation,
Response(Biology), Tables(Data), Pilots
ID (25) DOT/2A, DOT/5H
AB (27) A brief, voluntary questionnaire was administered to 1,115 Aviation
Medical Examiners (AME) to assess the frequency with which vestibular
tests (broadly defined) were given during physical examinations of
pilots, which tests were used, why they were used, whether AMEs
believed that specific tests should be routine, and why they believed
so. Responses were obtained from 55 percent of the AMEs (many not
responding were new AMEs with no experience). Of the respondents, 58
percent routinely gave tests of balance, equilibrium, or vestibular
functioning, 24 percent gave the tests under certain conditions, and 18
percent gave no tests. The Romberg and finger-pointing tests were the
most frequently used and were employed most often for screening
purposes or to identify a problem area. Seventy-five percent of the
AMEs indicated that specific tests should be routine; the test most
frequently recommended was the Romberg.

AN (1) AD-A017 492/XAG
FG (2) 120500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE
TI (6) National Airspace System. Measuring Air Route Traffic Control Center
Computer Utilization.

DN (9) Final rept. Apr 74-Apr 75
AU (10) McCrory, Michael J.
RD (11) Apr 1975
PG (12) 115 Pages
RS (14) FAA-RD-75-171
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Computer applications, *Computer programs, *Air space, *Control centers
Data processing, Data acquisition, Data reduction, Time, Scheduling, Utilization, Statistical data, Measurement
ID (25) DOT/41Z/ID
AB (27) Many of the proposals for improvement in National Airspace System (NAS) automation programs are dependent upon available computer processing time in the Air Route Traffic Control Center (ARTCC) computer systems. Systems Research and Development Service was tasked to determine the details of ARTCC Computer Utilization. After a discussion of available alternatives, it was decided to collect approximately six months of data from each of the twenty Air Route Traffic Control Centers within the conterminous United States. A computer program, designed and produced at NAFEC, reduces the collected data to meaningful statistics. This report presents the methods used as well as the conclusions derived from the survey. (Author)

AN (1) AD-A110 346/XAG
FG (2) 010600
050500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF CIVIL AVIATION SECURITY

TI (6) Effectiveness of the Civil Aviation Security Program.

DN (9) Semiannual rept. no. 1, 1973-1974.

RD (11) 17 Apr 1975

PG (12) 21 Pages

RS (14) FAA-ACS-82-1

RC (20) Unclassified report

NO (21) Report to Congress.

DE (23) *Civil aviation, *Security, *Crimes

Transport aircraft, Bombs, Threats, Sabotage, Crisis management, Strategy, Training, Security personnel, Law enforcement, Threat evaluation, Inspection, Passengers, Detection, Weapons, Explosives detection, Regulations, Aviation safety, Operational effectiveness

ID (25) Hijacking

AB (27) The report includes an analysis of the current threat against civil

aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program. (Author)

AN (1) AD-A009 665/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Airborne Meteorological Instrumentation System and Data Reduction.

DN (9) Final rept.

AU (10) McCollough, J. B.
Carpenter, Larry K.

RD (11) Mar 1975

PG (12) 104 Pages

RS (14) FAA-RD-75-69

RC (20) Unclassified report

DE (23) *Meteorological instruments

Airborne, Data acquisition, Data reduction, Atmospheric sounding

ID (25) DOT/41Z/IC

AB (27) This report describes the airborne meteorological (MET) data acquisition system developed by the FAA R and D Service for atmospheric sounding in support of research programs in aircraft noise, sonic boom, wake vortices, etc. A discussion of the systems instrumentation, design and data measured by the system is given. The airborne system is capable of measuring ambient temperature, dewpoint, turbulence dissipation rate, turbulence structure coefficients (Cv and CT), radio and barometric altitude, airspeed, and winds aloft. The flight and recording profiles are numerous and range from meteorologic contouring of large areas (up to 60 square miles) to very small areas, points and lines. Because turbulence is a difficult parameter to describe and/or measure, an extensive section is given on this subject. A recommendation section which describes system improvements for data recording, wind measurement, temperature measurement in moisture, accelerometers, and instrumentation for atmospheric pollution measurements is included.

AN (1) AD-A012 965/XAG

FG (2) 230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Anthropometry of Airline Stewardesses

AU (10) Snow, Clyde C.

Reynolds, Herbert M.

Allgood, Mackie A.

RD (11) Mar 1975

PG (12) 107 Pages

RS (14) FAA-AM-75-2

RC (20) Unclassified report

DE (23) *Anthropometry, *Females, *Flight crews

Surveys, Texas, Human factors engineering, Emergencies, Work, Aviation medicine, Tables(Data), Measurement

ID (25) Workplace layout, Design

AB (27) The report presents the body measurements of 423 stewardess trainees enrolled in the American Airlines Stewardess Training Academy in Fort Worth, Texas, between February and June 1971. It includes the means, standard deviations, coefficients of variation, percentiles, and related statistics of 72 standard anthropometric and functional measurements. The survey was initiated to provide adequate criteria for improving the emergency equipment availability and workspace design for the stewardess.

AN (1) AD-A013 614/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) The National Aviation System Plan 1976-1985. Appendix 2.

RD (11) Mar 1975

PG (12) 108 Pages

RC (20) Unclassified report

NO (21) See also AD-756 580.

AL (22) Availability: Paper copy available from GPO.

DE (23) *AIR TRANSPORTATION, *MANAGEMENT PLANNING AND CONTROL AIR TRAFFIC CONTROL SYSTEMS, NAVIGATIONAL AIDS, LANDING AIDS, AIRPORTS,

MANPOWER, RESEARCH MANAGEMENT, RADAR EQUIPMENT, AIRCRAFT, AVIATION

SAFETY

ID (25) National aviation system plan, DOT/2A, DOT/3B

AB (27) The Plan of 1975 is the sixth annual ten-year plan developed by the Federal Aviation Administration. It presents an integrated plan of action for meeting anticipated needs in the National Aviation System

through 1985 and provides a focal point for industry/government cooperation in agency planning. Long range plans are made and policies formulated with respect to, the orderly development and use of the navigable airspace, and the orderly development and location of landing areas, Federal airways, radar installations and all other aids and facilities for air navigation, as will best meet the needs of, and serve the interest of civil aeronautics and national defense, except for those needs of military agencies which are peculiar to air warfare and primarily of military concern. The Plan summarizes system additions, improvements, and changes required to meet realistic needs of aviation for the next decade. It is oriented to serve several different groups including aviation users who pay user charges, airport sponsors who build and maintain airports, aviation manufacturers who are helping to construct the system, and FAA personnel who operate and maintain the system.

24

AN (1) AD-A017 055/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) FAA Air Traffic Activity, Calendar Year 1974 and Terminal Area Relationships, Fiscal Year 1974.

RD (11) Mar 1975

PG (12) 427 Pages

RC (20) Unclassified report

NO (21) See also report dated 1971, AD-737 140.

DE (23) *Air traffic, *Civil aviation

Statistical data, Surveys, Operation, Aircraft, Instrument landings, Air traffic control terminal areas, Classification, Municipalities, Information systems

ID (25) DOT/2A, DOT/5L, Services

AB (27) This FAA publication furnishes terminal and enroute air traffic activity information of the National Airspace System. The data have been reported by the FAA-operated Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), Flight Service Stations (FSSs), and Approach Control Facilities. Data for 12-month periods are combined for fiscal and calendar year reports. These reports are used as a guide in determining the need for larger or additional facilities, and possible increases in personnel at existing facilities.

AN (1) AD-B037 007/XAG
FG (2) 230200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
TI (6) Color Requirements for the Marking of Obstructions.
DN (9) Final rept.
AU (10) Booker,Robert L.
RD (11) Mar 1975
PG (12) 25 Pages
RN (18) GIDEP-E085-1283
RC (20) Unclassified report
AL (22) Distribution limited to U.S. Gov't. agencies only; Test and Evaluation;
7 May 79. Other requests for this document must be referred to
Officer-in-Charge, GIDEP Operations Center, Corona, CA 91720.
DE (23) *Colors
Markers, Requirements, Orange, Luminance, Human factors engineering
DL (33) 03

AN (1) AD-A006 792/XAG
FG (2) 050800
050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE
TI (6) Predictive Validities of Several Clinical Color Vision Tests for
Aviation Signal Light Gun Performance
AU (10) Jones,Karen N.
Steen,Jo Ann
Collins,William E.
RD (11) Jan 1975
PG (12) 12 Pages
RS (14) FAA-AM-75-1
RC (20) Unclassified report
DE (23) *Color vision
Night vision, Visual perception, Performance(Human),
Thresholds(Physiology), Signal lights, Validation, Test methods,
Aviation personnel
AB (27) Scores on the American Optical Company (AOC) test (1965 edition),
Dvorine test, Farnsworth Lantern test, Color Threshold Tester,
Farnsworth-Munsell 100-Hue test, Farnsworth Panel D-15 test, and
Schmidt-Haensch Anomaloscope were obtained from 137 men with
color-defective vision and 128 men with normal color vision. The
validity of each of these tests in predicting scores on the aviation
signal light gun was assessed by using daytime and nighttime

administrations of the light gun as the criteria. Two 'best sets' of
plates from the AOC and Dvorine tests were selected by calculating a
multiple regression equation in a stepwise manner with the nighttime
and then the daytime administration of the signal light gun test as the
criteria. Based on a graphic presentation of the miss and false alarm
rates for each test at various possible cut scores, suggestions were
made regarding the use of each test and the selection of optimal
pass/fail scores.

AN (1) AD-A015 978/XAG
FG (2) 010309
010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE
TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Conference
Agenda.
RD (11) 1975
PG (12) 128 Pages
RC (20) Unclassified report
NO (21) See also AD-A015 979.
DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations
ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA
AB (27) This report contains the agenda for a conference called to discuss
proposals relative to standards governing the airworthiness of
commercial and general aviation aircraft. Eight other related documents
contain the committee reports relative to flight characteristics,
airframes, power plants, and various aircraft equipment.

AN (1) AD-A015 979/XAG
FG (2) 010309
010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE
TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Proposals
Not in Agenda.
RD (11) 1975
PG (12) 304 Pages
RC (20) Unclassified report
NO (21) See also AD-A015 978 and AD-A015 980.
DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings

Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations
ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA

AN (1) AD-A015 980/XAG
FG (2) 010309
010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Committee
I -Procedures and Special Subjects.**

RD (11) 1975
PG (12) 323 Pages
RC (20) Unclassified report
NO (21) See also AD-A015 979 and AD-A015 981.
AL (22) Availability: Available in microfiche only.
DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations
ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA
23

AN (1) AD-A015 981/XAG
FG (2) 010309
010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Committee
II -Flight.**

RD (11) 1975
PG (12) 353 Pages
RC (20) Unclassified report
NO (21) See also AD-A015 980 and AD-A015 982.
DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations
ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA

AN (1) AD-A015 982/XAG
FG (2) 010309
010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Committee
III -Airframe (Large Airplanes).**

RD (11) 1975
PG (12) 371 Pages
RC (20) Unclassified report
NO (21) See also AD-A015 981 and AD-A015 983.
AL (22) Availability: Available in microfiche only.
DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations
ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA
23

AN (1) AD-A015 983/XAG
FG (2) 010309
010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Committee
III -Airframe (Small Aircraft and Rotorcraft).**

RD (11) 1975
PG (12) 136 Pages
RC (20) Unclassified report
NO (21) See also AD-A015 982 and AD-A015 984.
AL (22) Availability: Available in microfiche only.
DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations
ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA
23

AN (1) AD-A015 984/XAG
FG (2) 010309
010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Committee
IV -Powerplant.**

RD (11) 1975
PG (12) 325 Pages

RC (20) Unclassified report
NO (21) See also AD-A015 983 and AD-A015 985.
DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations
ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA

AN (1) AD-A015 985/XAG

**FG (2) 010309
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Airworthiness Review Conference (First Biennial) 1974-1975. Committee V
-Equipment.**

RD (11) 1975

PG (12) 250 Pages

RC (20) Unclassified report

NO (21) See also AD-A015 984 and AD-A015 986.

AL (22) Availability: Available in microfiche only.

DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations

ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA
23

AN (1) AD-A015 986/XAG

**FG (2) 010309
010600**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Airworthiness Review Conference (First Biennial) 1974-1975.
Supplement.**

RD (11) 1975

PG (12) 132 Pages

RC (20) Unclassified report

NO (21) See also AD-A015 985.

DE (23) *Commercial aviation, *Commercial aircraft, *Aviation safety, *Meetings
Aircraft equipment, Airframes, Flight instruments, Flight maneuvers,
Aircraft landings, Takeoff, Runways, Regulations

ID (25) *Airworthiness, *General aviation, DOT/4DZ/DA

AN (1) AD-A019 153/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

**TI (6) Annual Report of Operations under the Airport and Airway Development
Act (6th), Fiscal Year Ended June 30, 1975.**

RD (11) 1975

PG (12) 128 Pages

RC (20) Unclassified report

NO (21) See also report dated 1974, AD-A003 779.

DE (23) *Airports, *Civil aviation, *Air transportation
Systems engineering, Aviation safety, Planning, Research management,
Jet aircraft

ID (25) Airport and Airway Development Act, Airport Development Acceleration
Act, DOT/2A

AB (27) The Airports Program covers the identification, planning, and
development of the Nation's system of public airports to serve the
needs of civil aviation in the fifty states, Guam, Puerto Rico,
American Samoa, the Trust Territory of the Pacific Islands, and the
Virgin Islands. It is based primarily on provisions of the Airport and
Airway Development Act of 1970 (Public Law 91-258) as amended, and the
Airport Development Acceleration Act of 1973 (Public Law 93-44) which
further amended Public Law 91-258. These laws provide legislative
recognition of an important national need for improvement in the
national airport and airway system. Principal activities in this
program include: Preparation of a National Airport System Plan and
other airports planning activities; administering a program of
grants-in-aid for airport development and airport planning, engineering
and safety standards; airport certification and inspection for safety
of operations; participating in transfers of Federal land and property
for civil airport use; field collection of data for the airport data
program; and assuring that public agencies receiving Federal assistance
continue to operate their airports for the benefit of the public in
accordance with their agreements.

AN (1) AD-A026 507/XAG

FG (2) 050900

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) U.S. Civil Airmen Statistics.

RD (11) 1975

PG (12) 34 Pages

RC (20) Unclassified report

DE (23) *Pilots, *Ground crews
Civil aviation, Commercial aviation, Tables(Data), Geographical distribution, Instrument flight, Statistical data
ID (25) Certification, Federal Aviation Administration, Instrument ratings
AB (27) The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma.

AN (1) AD-A040 360/XAG
FG (2) 010200
010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) Military Air Traffic Activity Report

AU (10) Cayce, Betty V.

RD (11) 1975

PG (12) 36 Pages

RC (20) Unclassified report

DE (23) *Air traffic, *Military operations

Air Force facilities, Statistics, Naval aviation, Army aviation, Instrument landings, Visual flight rules, Overseas, Domestic

AB (27) The Military Air Traffic Activity report is prepared as a document for Federal Aviation Administration personnel who have an operational interest in activity generated at military installations.

AN (1) AD-A006 789/XAG
FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) A Realistic View of the People in Air Traffic Control

AU (10) Smith, Roger C.

RD (11) Dec 1974

PG (12) 9 Pages

RS (14) FAA-AM-74-12

PJ (16) FAA-AM-A-72-PSY-34, FAA-AM-B-73-PSY-34

RC (20) Unclassified report

DE (23) *Air traffic controllers, *Human relations

Surveys, Personality, Aptitudes, Motivation, Interpersonal relations, Attitudes(Psychology), Pattern recognition, Personnel management
AB (27) An overview of research findings on air traffic controllers is presented. Results of personality, aptitude, motivation, interest, and attitude studies are considered in terms of the general pattern of characteristics found to be associated with success in the air traffic profession. The implications of these findings for managerial programs is discussed.

AN (1) AD-A008 378/XAG

FG (2) 060100

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) Comparison of OPA LOCKA Tower with Other ATC Facilities by Means of a Biochemical Stress Index.

DN (9) Final rept.

AU (10) Melton, C. E.

McKenzie, J. M.

Saldivar, J. T., Jr.

Hoffmann, S. M.

RD (11) Dec 1974

PG (12) 14 Pages

RS (14) FAA-AM-74-11

RC (20) Unclassified report

DE (23) *Stress(Physiology), *Catecholamines, *Air traffic controllers Indicators, Aviation personnel, Urine, Excretion, Biochemistry, Operators(Personnel), Heart, Stress(Psychology), Tables(Data)

AB (27) Physiological and biochemical measurements of stress in 14 Opa Locka Tower (OPF) controllers indicated that the principal stressor at that facility was the heavy volume of air traffic. Controllers responded to this stressor with a large increase in urinary output of catecholamines. A stress index, Cs, shows that OPF ranks second in stressfulness in the nine stress studies carried out at eight ATC facilities. Baseline values show that off-duty stress at OPF is low. The results of this study emphasize that a battery of tests is necessary for adequate definition of stress in this personnel group.

AN (1) AD-A013 348/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Analysis of the Requirement for Air Traffic Control Radar Research and Development

AU (10) Coonley, Kenneth E.

RD (11) Dec 1974

PG (12) 13 Pages

RS (14) FAA-RD-74-191

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Radar

Search radar, Airport radar systems, Research management, Requirements

ID (25) DOT/4IZ/ID

AB (27) The report examines the role of radar in the Upgraded Third Generation ATC System relative to the surveillance requirement for various categories of controlled airspace. It concludes that the retention of ATC radars solely for weather data does not appear desirable in the long term and the possibility exists that development and deployment of radar systems specifically for the detection of weather may be required. Radar surveillance for ATC in the enroute environment may only be required at selected locations by the mid 1980's; therefore research and development efforts on enroute radars should be limited to that required to support the Operating Services in the correction of field problems. Radar surveillance for the terminal environment will be required at most locations on a continuing basis into the foreseeable future; therefore research and development of advanced terminal radar techniques and systems should be continued.

AN (1) AD-A020 619/XAG

FG (2) 010305

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U.S. Civil Aircraft, Calendar Year 1974.

DN (9) Annual rept.

AU (10) Cayce, Betty V.

RD (11) 31 Dec 1974

PG (12) 318 Pages

RC (20) Unclassified report

NO (21) See also report dated Apr 74, AD-785 022.

DE (23) *Civil aviation, *Census

Aircraft, United States, Classification, Geographic areas, Airports, Statistical distributions, Heliports, Seaplanes, Pilots, Transport

aircraft, Flight, Seats, Production, Power

ID (25) Registered aircraft, Flight time, Manufacturers, DOT/2 A, DOT/4 HZ/HB

AB (27) This report covers statistical data, including general aviation, air carrier, aeronautical production, airports, detailed computer printouts for aircraft, and a glossary of the terms used in this publication.

AN (1) AD-A020 620/XAG

FG (2) 010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) FAA Statistical Handbook of Aviation. Calendar Year 1974.

DN (9) Annual rept.

AU (10) Cayce, Betty V.

RD (11) 31 Dec 1974

PG (12) 161 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Handbooks

Statistical data, Air traffic control systems, Airports, Air traffic, Aircraft, Costs, Pilots, Aviation accidents

ID (25) Licenses

AB (27) The report covers statistical data, including the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, U.S. Registered Aircraft, Aeronautical Production and Exports, Aircraft Accidents, and a Glossary of the terms used in this publication.

AN (1) AD-A131 738/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Microwave Landing System. Phase II. Tracker Error Study.

DN (9) Final study rept.

RD (11) Dec 1974

PG (12) 188 Pages

RS (14) FAA/RD-74-207

RC (20) Unclassified report

DE (23) *Microwave landing systems

Radar tracking, Flight instruments, Ground support equipment, Instrumentation, Errors, Runways, Approach, Navigational aids, Flight testing

ID (25) AN/FPS-16, AN/GSN-5

AB (27) This report documents a study of the types and amounts of errors inherent in the various instrumentation systems used for close-in and far-field dynamic flight tests for the Microwave Landing System (MLS) Development Program Phase II, at the two test sites and the four runways utilized, one for each contractor MLS. Analysis of Phase II flight test data depended on comparison of MLS azimuth, elevation and range functions with the same functions generated by ground tracker data, the difference being the error of the MLS functions if the error in the tracker functions is smaller by at least an order of magnitude. This study not only summarizes the results of hardware calibrations, data processing techniques and tracker error studies made during Phase II to define and reduce tracker errors, but projects the impact of remaining tracker error on MLS Phase I test results. (Author)

AN (1) AD-A002 920/XAG

FG (2) 050800
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Multiple Task Performance as a Predictor of the Potential of Air Traffic Controller Trainees: A Followup Study

AU (10) Chiles,W. Dean
West,Georgetta

RD (11) Nov 1974

PG (12) 6 Pages

RS (14) FAA-AM-74-10

PJ (16) FAA-AM-A-71-PSY-29, FAA-AM-C-75-PSY-40

RC (20) Unclassified report

DE (23) *PERFORMANCE(HUMAN), *AIR FORCE PERSONNEL, *AIR TRAFFIC CONTROLLERS

STATISTICAL PROCESSES, PERSONNEL DEVELOPMENT

AB (27) The current professional status of 229 air traffic controller trainees tested in an earlier series of complex performance studies was determined by reference to the official FAA personnel roster some 2 to 2 1/2 years later. Point-biserial correlations between the previously obtained performance measures and the retention/termination status of the trainees were computed; correlations were also computed between the criterion used in the earlier study (instructor ratings of trainee

potential) and the retention criterion and between the Civil Service Commission (CSC) air traffic control specialist (ATCS) aptitude screening battery scores (where available) and the retention criterion.

AN (1) AD- 785 016/XAG

FG (2) 010500
130100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Evaluation of an Experimental Elevated High-Intensity Runway Edge Light.

DN (9) Interim rept.

AU (10) Reamer,E. Leon

RD (11) Sep 1974

PG (12) 85 Pages

RS (14) FAA-NA-74-23

PJ (16) FAA-072-324-000

RN (18) FAA-RD-74-128

RC (20) Unclassified report

DE (23) *Landing lights, *Runways

Airports, All weather aviation, Photometry, Pilots, Visibility, Human factors engineering, Flight testing

ID (25) *Runway lights

AB (27) The subject effort was to determine the suitability of a newly designed elevated runway edge light to function in category I and category II operations when a high-intensity runway-light environment is prevalent. The work involved laboratory photometric measurements and analysis of pilot response after test flying the newly designed runway lighting system. The results of the tests indicated that the new design concept is appropriate for use under the conditions tested. (Author)

AN (1) AD- 787 231/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Multi-Site Interrogation Scheduling for the Discrete Address Beacon System.

DN (9) Final rept.

AU (10) Koenke,Edmund J.

Tymczynsyn,Joseph P.

RD (11) 12 Sep 1974
PG (12) 104 Pages
RS (14) FAA-EM-74-14
RC (20) Unclassified report
DE (23) *Air traffic control systems, *Radar beacons, *Interrogation
Multiple operation, Scheduling, Computer programs, FORTRAN
ID (25) DABS(Discrete Address Beacon Systems), Discrete address beacon systems
AB (27) A theoretical analysis and computer simulation were undertaken to develop a DABS/ATCRBS scheduling algorithm which would be capable of servicing the projected 1995 Los Angeles Basin (1608 aircraft aloft). A satisfactory technique was found using sub-epoch timing, partitioning between packed and synchro calls, and time-sharing (a separate interval for each site's synchro call). The technique also provides garble-free Synchro DABS (air-to-air CAS) service in the multi-site DABS/ATCRBS environment. Time is provided during the packed call interval for extended length messages and target reinterrogation.
(Modified author abstract)

AN (1) AD- 787 452/XAG

**FG (2) 010400
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - Area Navigation

AU (10) Brandewie, D. Michael
Cassell, Richardo

RD (11) Sep 1974

PG (12) 43 Pages

RS (14) FAA-ED-04-02

RC (20) Unclassified report

DE (23) *NAVIGATION

PLANNING, NAVIGATIONAL AIDS, AVIONICS, AUTOMATION

ID (25) *Area navigation

AB (27) The program development plan provides the research and development necessary to support the evaluation of the concepts and provide answers to critical issues affecting the implementation of area navigation (RNAV) as described in the report of the Joint FAA/Industry Area Navigation Task Force, 'Application of Area Navigation in the National Airspace System.' The program objectives, background, interfaces, technical approach, resource requirements and schedules are detailed in the plan. The program is responsive to the R and D requested efforts outlined in the Task Force Report. The work efforts are divided into

five interdependent product activities: RNAV Payoff Analysis, RNAV Terminal Design, RNAV En Route Design, RNAV Avionics and Supporting Studies. (Author)

AN (1) AD-A001 018/XAG

**FG (2) 150600
010200
150100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

POLICY AND PLANS

TI (6) Military Air Traffic Forecast Fiscal Years 1975-1986.

RD (11) Sep 1974

PG (12) 39 Pages

RC (20) Unclassified report

NO (21) See also report for Fiscal Years 1972-1983, N73-14014.

DE (23) *AIR TRAFFIC, *MILITARY TRANSPORTATION

MILITARY REQUIREMENTS, FORECASTING, PLANNING, AIRPORTS

AB (27) The report presents forecasts of military air traffic activity at facilities operated by the Federal Aviation Administration for fiscal years 1975 through 1986. These data are required for proper planning to meet the demands which the United States military services will place on the National Aviation System. The report is used as a guide in determining the need for larger or additional FAA facilities, for changes or consolidations, and for possible increases or decreases in personnel at existing facilities.

AN (1) AD-A002 266/XAG

**FG (2) 050800
200100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Behavioral, Automatic, and Subjective Reactions to Low- and Moderate-Level Simulated Sonic Booms: A Report of Two Experiments and a General Evaluation of Sonic Boom Startle Effects

AU (10) Thackray, Richard I.

Touchstone, R. Mark

Bailey, Joe P.

RD (11) Sep 1974

PG (12) 16 Pages

RS (14) FAA-AM-74-9

PJ (16) FAA-AM-E-74-PSY-47, FAA-AM-E-75-PSY-47
RC (20) Unclassified report
DE (23) *STRESS(PSYCHOLOGY), *PSYCHOLOGICAL TESTS, *SONIC BOOM
SIMULATION, INTENSITY, RESPONSE, EYE, NOISE POLLUTION
ID (25) *Startle effects, Annoyance, Eyeblink
AB (27) Two separate studies are reported. The first attempted to determine a sonic boom exposure level below which startle reactions would not occur. Subjects were exposed indoors to six simulated sonic booms having various outside overpressures. In the second study, subjects were exposed indoors to a series of 12 simulated booms in order to assess habitual effects. Automatic and eyeblink responses, as well as ratings of subjective annoyance, were obtained in both studies. The final section of the report summarizes the expected behavioral, autonomic, and subjective effects of exposure to various levels of sonic booms.

AN (1) AD-A002 618/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AVIATION
FORECAST
BRANCH

TI (6) Aviation Forecasts. Fiscal Years 1975-1986.
RD (11) Sep 1974
PG (12) 49 Pages
RC (20) Unclassified report
NO (21) See also report dated Sep 72, AD-757 174.
DE (23) *FORECASTING, *CIVIL AVIATION
AIRCRAFT INDUSTRY, AIRCRAFT ENGINES, PILOTS, AIR TRAFFIC CONTROL
SYSTEMS, FUEL CONSUMPTION, AIRPORTS, AIR TRAFFIC
ID (25) General aviation aircraft, DOT/2A, DOT/5F
AB (27) The report contains the latest Federal Aviation Administration forecasts of revenue passenger miles and enplanements, and measures of workload and activity at towered airports, air route traffic control centers, and flight service stations for the period Fiscal Year (FY) 1975 to FY 1986. The forecasts were made for the four major users of the system: air carrier, air taxi, general aviation, and the military.

AN (1) AD-A002 752/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AVIATION
FORECAST
BRANCH

TI (6) Index to FAA Regions and Air Route Traffic Control Centers. Fiscal
Years 1975-1986.
RD (11) Sep 1974
PG (12) 45 Pages
RC (20) Unclassified report
DE (23) *AIR TRAFFIC, *INSTRUMENT FLIGHT, *AIR TRAFFIC CONTROL TERMINAL
AREAS
UNITED STATES, ALASKA, PLANNING, GREAT LAKES, PACIFIC OCEAN ISLANDS
AB (27) The report provides forecasts of IFR aircraft handled by FAA air route
traffic control centers (ARTCC). It serves as a base for the FAA
planning and budget process in determining future requirements for
facilities, equipment, and manpower.

AN (1) AD-A003 794/XAG
FG (2) 170703
250200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
SYSTEMS
ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan. (AEROSAT), Aeronautical
Satellites.
RD (11) Sep 1974
PG (12) 228 Pages
RS (14) FAA-ED-17-2
RC (20) Unclassified report
DE (23) *Satellite communications, *Air traffic control systems
Communication satellites, Atlantic Ocean
ID (25) DOT/4IZ/ID
AB (27) The program plan covers the planning, development, engineering,
experimentation, and evaluation of an aeronautical satellite
communication capability over the Atlantic Ocean.

AN (1) AD-A006 504/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AVIATION
FORECAST
BRANCH

TI (6) Terminal Area Forecast, 1976-1986.
RD (11) Sep 1974
PG (12) 296 Pages
RC (20) Unclassified report
DE (23) *Air transportation, *Forecasting

Air traffic control systems, Airport control towers, Passenger aircraft, Statistical data, Consumers, Urban areas, Operation, Classification, Terminal flight facilities

ID (25) Federal Aviation Administration regions, State planning, DOT/2A
AB (27) This document presents forecasts of key aviation activity measures for fiscal years 1976, 1977, 1978, 1981, and 1986 for 808 airports, RAPCON's, and RATCC's. The forecasts are prepared to meet the needs of planning personnel concerned with future traffic levels at these facilities. The airports selected for inclusion in this publication met at least one of the following criteria: Existing tower, candidate for a tower, currently receiving or forecast to receive certificated route air carrier or air taxi service, and any general aviation airport which will exceed 60,000 itinerant and/or 100,000 total operations annually by 1977. The report is organized by FAA region and within each region by state.

AN (1) AD-A000 014/XAG
FG (2) 010100
010305

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Concorde Landing Requirement Evaluation Tests.

DN (9) Final rept.

AU (10) Merritt, Leslie R.

RD (11) Aug 1974

PG (12) 218 Pages

RS (14) FAA-FS-160-74-2

RC (20) Unclassified report

DE (23) *AIRCRAFT LANDINGS, *SUPERSONIC AIRCRAFT

FLIGHT PATHS, FRICTION, SKIDDING, BRAKING, APPROACH, GLIDE SLOPE

ID (25) Concorde aircraft, L-1011 aircraft, Boeing 737 aircraft

AB (27) Tests of two late model jet transports, a Lockheed L-1011 and a Boeing 737 ADV., were conducted at Roswell, N.M. during the period of October 12-26, 1973, for the purpose of evaluating the Concorde SST Special Condition Landing Requirement. Flight path angle during approach landing weight, approach speed, sink rate at touchdown were all varied. Landings were made on both a wet and dry surface and up to five ground friction measurement vehicles were evaluated along with the aircraft. The landing requirement was shown to be feasible. Two minor changes to the requirement, both relaxatory, are indicated. One, change the reference approach flight path angle from 2.5 degrees to 3 degrees and two, revise the touchdown rate-of-sink requirement from a 3 ft./sec. maximum to a 3 ft./sec. mean with the maximum test data point not to

exceed 5 ft/sec. The procedure for relating aircraft effective braking friction coefficient to the aircraft and the Diagonal-braked vehicle wet-to-dry stopping distance ratio (SDR) is shown to be adequate to establish Flight Manual data. (Author)

AN (1) AD-A010 917/XAG

FG (2) 220200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Memorandum of Understanding on a Joint Program of Experimentation and Evaluation Using an Aeronautical Satellite Capability between the United States Department of Transportation, Federal Aviation Administration, the European Space Research Organisation (ESRO), and the Government of Canada.

DN (9) International agreement rept. 1974-1984.

RD (11) 02 Aug 1974

PG (12) 69 Pages

RC (20) Unclassified report

DE (23) *Navigation satellites, *International relations

Communication equipment, Very high frequency, L band, Air traffic, Satellite communications, Canada, United States government, Agreements

ID (25) DOT/4IZ/ID, DOT/4DZ/DY, AEROSAT satellites

AB (27) An international Memorandum of Understanding (MOU) on the JOINT AEROSAT EVALUATION PROGRAM was signed by the FAA Administrator on May 9, 1974 and by the Acting Director-General of ESRO and the Canadian Ambassador to France on August 2, 1974. The MOU package includes the MOU document (18 pp.), related exchange of correspondence (4 pp.), and two integral Annexes (38 and 7 pp. each). The MOU consists of 18 articles which: define objectives and organization of major elements of the program; specify financing policies, satellite deployment, utilization of AEROSAT capability, exchange of test results, and rationale for broadening participation by other Sovereign States; and provide for MOU termination, MOU amendment, procedures for handling disputes and exemption from taxes and customs duties. The exchange of correspondence between FAA and ESRO is concerned with the meaning and scope of the MOU. The major Annex contains the AEROSAT Performance Specification, which assumes the use of L-band between satellites and aircraft. The minor Annex defines the Added Experimental Capability: this is intended to provide FAA with a direct comparison between VHF communication channels and L-band communication channels.

AN (1) AD- 781 358/XAG

FG (2) 010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) SRDS Technical Program Document, Fiscal Year 1975 Engineering and Development Programs.

RD (11) Jul 1974

PG (12) 166 Pages

RC (20) Unclassified report

NO (21) See also report dated Jul 73, AD-771 208.

DE (23) *Air traffic control systems, *Air transportation, *Civil aviation

Systems engineering, Radar, Radar beacons, Navigation, Aircraft, Communication and radio systems, Landing aids, Approach, Aviation safety, Weather, Airports, Research management, Planning

AB (27) The document contains research and technology Resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, accomplishments, requirements, etc. The document is structured according to 21 engineering and development programs.

AN (1) AD- 784 430/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Current Aviation Statistics: Airports, Air Carrier Fleet, Air Traffic Activity, Aircraft Industry, Airmen, and Appropriations.

RD (11) Jul 1974

PG (12) 32 Pages

RC (20) Unclassified report

DE (23) *Civil aviation, *Military aircraft

Statistical data, Landing fields, Airports, Helicopters, Transport aircraft, Turbomachinery, Rotary wings, Piston engines, Passenger aircraft, Instrument flight, Production rate, Pilots

ID (25) Seaplane bases, Single engine aircraft, Twin engine aircraft, Three engine aircraft, Fixed wing aircraft

AB (27) Tabular data are provided on the following topics: airports, air traffic activity, air carrier fleet, aircraft industry, and airmen.

AN (1) AD-A004 308/XAG

**FG (2) 010500
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY AND PLANS

TI (6) The Airport Passenger Head Tax Analysis of Its Potential Impact.

DN (9) Final rept.

AU (10) Fromme, William R.

RD (11) Jul 1974

PG (12) 149 Pages

RS (14) FAA-AVP-74-1

RC (20) Unclassified report

DE (23) *Airports, *Finance, *Economics

Surveys, Costs, Policies, Planning, Management

ID (25) *Airport passenger head tax, Taxes, Revenue

AB (27) The report examines the financial posture of approximately 55 airports which adopted head taxes in 1973, and evaluates the impact of the tax on airport operations and development programs. Results of the analysis indicate that only the largest airports surveyed--those with annual passenger enplanements exceeding 275,000--were typically able to meet their operating expenses and debt payments with self-generated funds. Most NonHub facilities surveyed (passenger enplanements less than 97,000 per year) required some form of subsidy just to meet operating expenses. Considering the financial requirement of air carrier airports, the revenue potential of the passenger head tax and the small impact of the tax on air travel demanded, this report finds no significant financial argument for maintaining the prohibition of head taxes.

AN (1) AD-A956 003/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF MANAGEMENT

SYSTEMS

TI (6) General Aviation Activity Survey: 1972.

RD (11) Jul 1974

PG (12) 91 Pages

RC (20) Unclassified report

DE (23) *CIVIL AVIATION, *GENERAL AVIATION AIRCRAFT, *SURVEYS AIRPORTS, TRAFFIC, FUEL CONSUMPTION, PILOTS, WEATHER

COMMUNICATIONS

ID (25) U/A Reports

AN (1) AD- 783 753/XAG

FG (2) 010600
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS

TI (6) 1973 U.S. Civil Airmen Statistics.

RD (11) Jun 1974

PG (12) 40 Pages

RC (20) Unclassified report

NO (21) See also report dated Oct 73, AD-772 512.

DE (23) *Civil aviation, *Flight crews

Statistical data, Pilots, Males, Females, Helicopters, Gliders,
Commercial planes, Transport aircraft

ID (25) *Pilot certificates, *Nonpilot certificates, *Airman certificates

AB (27) The 1973 U.S. Civil Airmen Statistics is published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. The collection and dissemination of expanded aircraft data have created a need for more compatible airmen statistics. This information is required to establish more valid relationships between aircraft and airmen and to furnish more realistic bench marks for measuring trends in the civil airmen counts and their overall effect on the various segments of aviation. Statistics pertaining to airmen, both pilot and nonpilot, are presented.

AN (1) AD- 779 496/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Dual Lane Runway Study.

DN (9) Final rept. Jan 71-Jan 74

AU (10) Reynolds,Myles

Gibson,Jerry

Burke,Jack

Clark,Jack

Ball,Carl

RD (11) May 1974

PG (12) 17 Pages

RS (14) FAA-RD-74-80

PJ (16) FAA-082-421-214

RC (20) Unclassified report

DE (23) *Runways, *Aircraft landings

Computerized simulation, Air traffic control systems, Sites, Models,
Operation

ID (25) *Dual lane runways, Close parallel runways, Design

AB (27) An interservice adhoc Dual Lane Runway (DLRW) Committee was established in January 1971, to develop, evaluate and demonstrate dual lane runway design criteria, modes of operation and site selection criteria. In support of this effort, data were collected on dual lane runway operations at Cleveland Hopkins, Boston Logan, Los Angeles International, and Atlanta Hartsfield International Airports. The Lincoln Laboratory of MIT was employed to conduct real time (man-in-the-loop) and fast time (canned program) computer simulations of dual lane runway configurations and operation strategies. The purpose of the report is to summarize the finding of Lincoln Laboratory and the Airport Design Branch, and make recommendations to the agency concerning the design, location and operation of dual lane runways.

AN (1) AD- 780 050/XAG

FG (2) 240200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND

DEVELOPMENT SERVICE

TI (6) The Response of Songbirds to the Seismic Compression Waves Preceding
Sonic Booms.

DN (9) Final rept.

AU (10) Higgins, Thomas H.

RD (11) May 1974

PG (12) 28 Pages

RS (14) FAA-RD-74-78

PJ (16) FAA-202-554-015

RC (20) Unclassified report

DE (23) *BIRDS, *SONIC BOOM, *SEISMIC WAVES

WILDLIFE, RESPONSE(BIOLOGY), AUDIO TAPES, TEST METHODS, TEST
EQUIPMENT,

RECORDING SYSTEMS, SOUND, SUPERSONIC AIRCRAFT, JET AIRCRAFT NOISE

ID (25) *Animal behavior, Noise pollution

AB (27) Among the environmental and operational problems studied during the program were the effects of the sonic booms on wildlife. In addition to the customary sonic boom overpressure signature measurements, audio tape recordings were made at both outdoor and indoor measurement sites and these were studied in relation to the other measures obtained. Analysis of the audio tapes disclosed an interesting phenomena. The continuous songs of birds of the field were completely silenced 4 to 8 seconds prior to the arrival of the audible sonic boom. Additional

audio recordings, made for the specific purpose of verifying this complete silence of all songbirds 4 to 8 seconds prior to the arrival of the sonic boom's audible report and overpressure signature measurement, were identical to the first obtained. Further study disclosed that this response of songbirds coincides with the arrival of the seismic signal propagated through the ground and preceding the sonic boom shock wave by 4 to 8 seconds. (Modified author abstract)

AN (1) AD- 780 379/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Experimentation and Evaluation of Improved Stall Warning Equipment, Phase II.

DN (9) Final rept.

AU (10) Scott, Barry C.

RD (11) May 1974

PG (12) 65 Pages

RS (14) FAA-RD-73-179

PJ (16) FAA-560-101-02X

RC (20) Unclassified report

NO (21) Supersedes report AD-773 384.

DE (23) *Flight instruments, *Stall warning indicators

Airspeed indicators, Flight maneuvers, Stalling, Approach, Flight testing, Aviation safety

ID (25) *Aircraft onboard checkout systems, *General aviation aircraft

AB (27) The report describes the experimentation conducted to develop a more comprehensive flight test program for evaluation of stall warning systems and then uses this program to evaluate five typical and improved stall warning systems. Based on results of these tests suggested revisions and additions to Federal Aviation Regulations Part 23, Stall Warning Requirements are discussed. The report supersedes report of identical title dated November 1973. (Modified author abstract)

AN (1) AD- 783 190/XAG

FG (2) 010500

081000

130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Review of Soil Classification Systems Applicable to Airport Pavement Design.

DN (9) Final rept. May 73-May 74

AU (10) Yoder, Eldon J.

RD (11) May 1974

PG (12) 129 Pages

RS (14) FAA-RD-73-169

RC (20) Unclassified report

DE (23) *Soil classification, *Landing fields, *Pavements

Soils, Soil mechanics, Plastic properties, Indexes(Ratios),

Predictions, Sensitivity

ID (25) *Pavement design

AB (27) Three soil classification systems used in the paving profession were evaluated to determine the applicability of each for airport pavement design. The three methods studied were the AASHTO, FAA and Unified systems. It is shown that the FAA system for fine grained soils is largely dependent upon the liquid limit, whereas the classification by the other methods depends upon both the liquid limit and the plasticity index. It is demonstrated that the plasticity index is a good predictor of several properties and, hence, the FAA system is somewhat limited in that regard. A sensitivity analysis was made on the ability of each of the systems to predict various soil properties. The FAA system was found to be relatively more insensitive than the other systems. A statistical analysis was made of several soil areas. It is demonstrated that the Unified system is relatively more sensitive in predicting soil behavior than the AASHTO and FAA systems. (Modified author abstract)

AN (1) AD- 777 569/XAG

FG (2) 010309

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) STOL Noise Prediction and Attenuation Models in Support of Regulatory Effort.

DN (9) Final rept.

AU (10) Power, Joseph K.

RD (11) Apr 1974

PG (12) 86 Pages

RS (14) FAA-RD-74-70

RC (20) Unclassified report

NO (21) Presented at Joint International Short Course; 'STOL Aircraft Technology and the Community', 22-26 Apr 74.

DE (23) *Commercial planes, *Short takeoff aircraft, *Aircraft noise
Noise reduction, Aerodynamic noise, Jet engine noise, Airplane engine noise, Regulations, Models

AB (27) For Commercial STOL Aircraft the most critical design parameter is the noise level. This paper discusses the impact of existing and expected noise regulations on the development of STOL aircraft. Models for STOL noise prediction are presented, as well as noise reduction mechanisms and a ranking of V/STOL aircraft noise sources. The report was presented as part of short course in STOL Technology 'STOL Aircraft Technology and The Community', jointly sponsored by the University of Tennessee Space Institute and the Technical University of Aachen, Germany. Participants included Nationals of Germany, Canada, United Kingdom as well as industry participants throughout the U.S. (Author)

AN (1) AD- 779 312/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) International Microwave Landing System (MLS) Symposium Held at Washington, D. C. on November 30 through December 4, 1973.

RD (11) Apr 1974
PG (12) 471 Pages
RS (14) FAA-RD-74-56
RC (20) Unclassified report
DE (23) *Landing aids, *Meetings
Microwave equipment, Doppler systems, Distance measuring equipment, Data links, Radar beacons, Air traffic control systems

ID (25) *Microwave landing systems

AB (27) The Federal Aviation Administration/Department of Transportation sponsored a three-day International Microwave Landing System Symposium in Washington, D.C., November 30 and December 3, 4, 1973. The symposium served as an open forum for exchange of technical information between International Civil Aviation Organization (ICAO) member nations sponsoring MLS development programs as well as others having an interest in these efforts. This document, which is a record of the symposium, includes presentations by the five nations with programs underway. In addition, Canada offered a presentation on a Short Take Off and Landing (STOL) demonstration program, and several presentations were offered on MLS operational and technical considerations. (Modified author abstract)

AN (1) AD- 781 518/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Commuter Air Carrier Operators as of September 1973.

RD (11) Apr 1974
PG (12) 62 Pages
RC (20) Unclassified report
DE (23) *Commercial aviation, *Air traffic
Commercial aircraft, Scheduling, Distribution, Routing, Passenger aircraft, Statistical data

ID (25) Air commuters, Air taxis

AB (27) There were 174 Commuter Air Carriers who reported operations to CAB for the quarter ending September 30, 1973, an increase of 22.5% over last year. The number of aircraft operated by these carriers increased 13.8% to 855 units with an estimated value of \$159,699,000. Available seats increased 18.7% from 8,300 in 1972 to 9,900 in 1973. During this three month period there were 234,000 flights made by this group, 6.8% above the 219,000 reported for last year.

AN (1) AD- 785 022/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) Census of U. S. Civil Aircraft, Calendar Year 1972.

RD (11) Apr 1974
PG (12) 278 Pages
RC (20) Unclassified report
AL (22) Availability: Paper copy available from GPO \$2.85 as stock no. 5007-00241.

DE (23) *Civil aviation, *Census
Aircraft, United States, Statistical data, Airports, Classification, Shipping, Fabrication

ID (25) State summaries

AB (27) The Census contains an annual count of all registered civil aircraft in the United States. This information is to serve as an up-to-date reference on the U.S. civil aircraft fleet, its size, and composition. Historical series are presented to enable industry and other aviation groups to evaluate aviation progress, determine past trends, and estimate future trends. The publication contains data for calendar

year 1972. (Modified author abstract)
24

AN (1) AD- 776 682/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) An Overview of the FAA Engineering and Development Programs with Highlights of Fiscal Years 1974-1975.

RD (11) Mar 1974

PG (12) 88 Pages

RS (14) FAA-EM-74-8

RC (20) Unclassified report

NO (21) See also report dated Mar 73, AD-758 284.

DE (23) *Air traffic control systems, *Systems analysis, *Aviation safety, *Airports

Planning, Forecasting, Reports, Management, Facilities, Finance

AB (27) A report is made on the Federal Aviation Administration's developmental program for air traffic control and safety, indicating long term directions, highlighting 1974 achievements to date, and discussing the expected progress and accomplishments for 1975. It includes systems evolution, upgraded third generation control, airport characteristics, general aviation considerations, program descriptions, and management.

AN (1) AD- 777 914/XAG

**FG (2) 010500
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Analysis of Dual Lane Runways.

DN (9) Final rept.

AU (10) Ball, Carl T.

RD (11) Mar 1974

PG (12) 61 Pages

RS (14) FAA-RD-73-97

PJ (16) FAA-082-421-214

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Terminal flight facilities, *Runways

Aircraft landings, Takeoff, Taxiways, Scheduling, Mathematical models

ID (25) *Dual lane runways

AB (27) An interservice ad hoc Dual Lane Runway (DLRW) Committee was established in January 1971 to develop, evaluate and demonstrate dual lane runway design criteria, modes of operation and site selection criteria. In support of this effort, data was collected on dual lane runway operations at Cleveland Hopkins, Boston Logan, Los Angeles International, and Atlanta Hartsfield International Airports. The Lincoln Laboratory of MIT was employed to conduct real time (man-in-the-loop) and fast time (canned program) computer simulations of dual lane runway configurations and operation strategies. The bulk of their work dealt with using one runway for arrivals only and one runway for departures only. The dual lane analysis was extended by the Airport Design Branch of the Systems Research and Development Service (SRDS) to include modes of operation where both runways were used for arrivals and one or more runways for departures. A model predicting potential missed approaches was used for this effort. (Modified author abstract)

AN (1) AD- 777 484/XAG

FG (2) 240100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Aircraft Propulsion Systems Air Pollution.

RD (11) Feb 1974

PG (12) 36 Pages

RS (14) FAA-ED-20-1

RC (20) Unclassified report

DE (23) *Air pollution, *Aircraft, *Scientific research
Planning, Standards, Control

ID (25) Air pollution abatement

AB (27) The Aircraft Propulsion Systems Air Pollution Program Engineering and Development Plan states the objectives, scope of work, tentative schedules necessary to meet the objectives, and recommended funding levels to accomplish the Federal Aviation Administration's research needs in the control and reduction of aircraft propulsion systems air pollution. These needs are in consonance with the authorities and responsibilities placed on the FAA by the Clean Air Amendments of 1970 (Public Law 91-604). The planned work covers the time period through 1979. (Author)

AN (1) AD- 782 043/XAG

FG (2) 010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) Military Air Traffic Activity Report - Calendar Year 1973

AU (10) Cayce, Betty V.
Hermann, Ronald W.

RD (11) 1974

PG (12) 46 Pages

RC (20) Unclassified report

NO (21) See also AD-726 971.

DE (23) *Air traffic, *Military applications, *Reviews
Air Force, Army aircraft, Naval aircraft, Reports, Air Force facilities, Naval shore facilities, Army operations, Statistical data, Classification

ID (25) NTISDOT

AB (27) The air traffic report is prepared as a document for Federal Aviation Administration personnel who have an operational interest in activity generated at military installations. The data presented in the tabulations were compiled from the following sources: USAF Air Traffic Control, Army air traffic count, and Navy air traffic reports. Every attempt has been made to achieve a high degree of comparability in the activity data presented for the three branches of the Department of Defense.

AN (1) AD- 785 296/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Computer Simulation to Establish Structural Design and Inspection Criteria.

RD (11) 1974

PG (12) 110 Pages

RC (20) Unclassified report

DE (23) *Commercial planes, *Structural properties, *Aviation safety
Inspection, Maintenance, Scheduling, Defects(Materials), Cost analysis, Computerized simulation

ID (25) *Structural design, *Design criteria

AB (27) The paper presents a plan for FAA development of a method to establish aircraft structural inspection programs on a more rational scientific basis. The structure of a commercial air transport is inspected periodically to detect defects or damage before such deficiencies become hazardous and preferably before extensive repair is required. While the airline safety record is considered good and has been

improving, there have still been accidents and incidents in recent years as a result of failures from defects which were not detected. Hazards or failure causes for this paper are classified as - fatigue and corrosion; birth defects as production or design defects; and service operational or maintenance damage. (Modified author abstract)

AN (1) AD-A003 779/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Annual Report of Operations Under the Airport and Airway Development Act (5th), Fiscal Year Ended June 30, 1974.

RD (11) 1974

PG (12) 133 Pages

RC (20) Unclassified report

NO (21) See also report dated 1973, AD-773 571.

DE (23) *Airports, *Civil aviation, *Air transportation
Planning, Systems engineering, Aviation safety, Jet aircraft, Research management

ID (25) Airport and Airway Development Act, Airport Development Acceleration Act, DOT/2A

AB (27) The Airports Program covers the identification, planning, and development of the Nation's system of public airports to serve the needs of civil aviation in the fifty states, Guam, Puerto Rico, American Samoa, the Trust Territory of the Pacific Islands, and the Virgin Islands. It is based primarily on provisions of the Airport and Airway Development Act of 1970 (Public Law 91-258) and a recently enacted amendment, the Airport Development Acceleration Act of 1973 (Public Law 93-44), which respond to a critical national need for improvement in the airport segments of the national aviation system. Airport system improvement is needed to increase system capacity and to accommodate higher performance aircraft.

AN (1) AD- 777 563/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Utility of Several Clinical Tests of Color Defective Vision in Predicting Daytime and Nighttime Performance with the Aviation Signal Light Gun

AU (10) Steen, Jo Ann
Collins, William E.

Lewis, Mark F.
RD (11) Dec 1973
PG (12) 20 Pages
RS (14) FAA-AM-73-18
RC (20) Unclassified report
DE (23) *COLOR VISION
NIGHT VISION, VISUAL PERCEPTION, PERFORMANCE(HUMAN),
THRESHOLDS(PHYSIOLOGY), SIGNAL LIGHTS
AB (27) Subjects of varying type and degree of color deficiency were tested on a battery of color tests, including the American Optical Company Plates (both 1940 and 1965 editions), the Dvorine Plates, the Farnsworth-Munsell 100-hue, the Farnsworth Lantern, the Farnsworth Panel D-15, the SAM Color Threshold Tester, the Titmus Vision Tester Color Plate, and an anomaloscope. Correlations with a daytime and nighttime practical test of the ability of subjects to discriminate aviation signal red, white, and green were obtained. The results indicate that color defective people can identify flashes from a signal light gun better at night than during the day. It was also found that the Farnsworth Lantern, the SAM Color Threshold Tester, the two sets of A O Plates, and the Dvorine Plates were among the best predictors of performance on the practical test; the Titmus Plate was the poorest predictor. (Author)

AN (1) AD- 777 564/XAG
FG (2) 050800
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Reception of Distorted Speech

AU (10) Tobias, Jerry V.

Irons, F. Michael

RD (11) Dec 1973

PG (12) 12 Pages

RS (14) FAA-AM-73-13

RC (20) Unclassified report

DE (23) *SPEECH RECOGNITION, *INTELLIGIBILITY

BACKGROUND NOISE, AUDITORY PERCEPTION, SIGNAL TO NOISE RATIO, LEARNING

AB (27) Noise, either in the form of masking or in the form of distortion products, interferes with speech intelligibility. When the signal-to-noise ratio is bad enough, articulation can drop to unacceptably--even dangerously--low levels. However, listeners are capable of learning to listen to such speech and to improve their

comprehension of it. In the experiments described here, the nature of this learning and the necessary amounts of time for maximum improvement are explored. The effects of several types of signal degradation are discussed, as are suggestions for training listeners to understand them. Among the processes investigated are the transfer of listening experience with one kind of signal to the analysis of another kind, the effects of actively participating in the listening task, and the results of manipulating motivation. (Modified author abstract)

AN (1) AD- 777 565/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Susceptibility to Anxiety and Shift Difficulty as Determinants of State Anxiety in Air Traffic Controllers

AU (10) Smith, Roger C.

Melton, C. E., Jr

RD (11) Dec 1973

PG (12) 6 Pages

RS (14) FAA-AM-73-15

RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *ANXIETY

STRESS(PSYCHOLOGY), JOB ANALYSIS, PERFORMANCE(HUMAN), TEST METHODS,

ASSESSMENT

AB (27) The State-Trait Anxiety Inventory (STAI) was used to assess the anxiety of air traffic controllers who had experienced difficult and easy work shifts. Eighty volunteers completed the STAI before and after two or more eight-hour work shifts. Controllers relatively high in anxiety proneness tended to report higher levels of anxiety in association with control work than those relatively low in anxiety proneness. The mean A-state score after shifts was higher than the mean score before shifts. It was also determined that the increase in anxiety during shifts was greater for difficult shifts. (Author)

AN (1) AD- 777 581/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) A Comparison of the Startle Effects Resulting from Exposure to Two

Levels of Simulated Sonic Booms

- AU (10) Thackray, Richard I.
Touchstone, Robert M.
Bailey, Joe P.
RD (11) Dec 1973
PG (12) 14 Pages
RS (14) FAA-AM-73-16
RC (20) Unclassified report
DE (23) *SONIC BOOM
PSYCHOMOTOR FUNCTIONS, STRESS(PHYSIOLOGY), RESPONSE(BIOLOGY), PERFORMANCE(HUMAN), HEART, EYE, GALVANIC SKIN RESPONSE, REFLEXES, NOISE, AUTONOMIC NERVOUS SYSTEM
ID (25) *Startle responses, Noise pollution, Heart rate
AB (27) Subjects were exposed indoors to simulated sonic booms having outside overpressures of 50 and 150 N/sq m. Rise times were held constant at 5.5 msec. In addition to the outside measurements, inside measures of dBlin and dBA were also obtained. Subjects attempted to hold a hand-steadiness device on target during boom exposure and amplitude of the arm-hand startle response was determined. Recordings were also obtained of the skin conductance and heart-rate responses as well as the eye-blink reflex. Although the 50 N/sq m boom produced slight arm-hand startle responses in a small percentage of subjects, the frequency of these responses was significantly greater to the higher boom level. Tentative conclusions advanced that sonic booms experienced indoors may cause slight arm-hand startle responses which could have adverse effects on occupational tasks in which arm-hand steadiness is the principal skill required, but that it seems unlikely these responses would significantly impair performance on less sensitive psychomotor tasks. (Modified author abstract)

- AN (1) AD- 777 582/XAG
FG (2) 061000
061500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Effects of Secobarbital and D-Amphetamine on Tracking Performance during Angular Acceleration
AU (10) Schroeder, David J.
Collins, William E.
Elam, Gary W.
RD (11) Dec 1973
PG (12) 11 Pages

- RS (14) FAA-AM-73-17
RC (20) Unclassified report
DE (23) *Aerospace medicine, *Psychomotor functions, *Tracking, *Amphetamines, *Barbituates
Drugs, CNS depressants, Angular acceleration, Performance(Human), Response(Biology), Vestibular apparatus, Nystagmus, Pharmacology, Stress(Physiology)
ID (25) *Angular acceleration stress, Psychoneuropharmacology
AB (27) Thirty young men were randomly assigned in equal numbers to one of the following groups: placebo (lactose), secobarbital (100 mg), or d-amphetamine (10 mg). The drugs or placebo were administered in capsules in a double-blind procedure. Tests were scheduled 1, 2, and 4 hours after capsule ingestion; all tests were conducted inside a Stille-Werner rotator and were in total darkness with the exception of the illuminated tracking display. During angular acceleration, secobarbital subjects made significantly more tracking errors and had significantly more vestibular nystagmus than both the control and the d-amphetamine groups for all post-drug sessions. These findings agree with previous studies of alcohol effects: depressant drugs may have little or no deleterious influence on tracking performance in static environments, but may produce marked performance degradation during angular motion. (Modified author abstract)

- AN (1) AD- 778 214/XAG
FG (2) 050800
061000
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Physiological, Biochemical, and Psychological Responses in Air Traffic Control Personnel: Comparison of the 5-Day and 2-2-1 Shift Rotation Patterns
AU (10) Melton, C. E.
McKenzie, J. M.
Smith, R. C.
Polis, B. D.
Higgins, E. A.
RD (11) Dec 1973
PG (12) 19 Pages
RS (14) FAA-AM-73-22
PJ (16) FAA-AM-B-72-PHY-55
RC (20) Unclassified report

DE (23) *AIR TRAFFIC CONTROLLERS, *STRESS(PHYSIOLOGY),
*STRESS(PSYCHOLOGY)
PSYCHOLOGICAL TESTS, PERFORMANCE(HUMAN), RESPONSE(BIOLOGY),
AVIATION
PERSONNEL, WORK, CYCLES, REST, BIOCHEMISTRY, FATIGUE(BIOLOGY)
AB (27) Stress in controllers on the straight five-day shift was determined at Houston Intercontinental Tower in 1970. In 1971 controllers on the 2-2-1 rotation were studied at the same tower. Controllers generally prefer the 2-2-1 to the straight five-day schedule because of the long week end associated with the 2-2-1. Management is concerned that the 'quick turnaround' on the 2-2-1 is a stressor that could compromise job performance. Physiological and psychological assessments showed no significant stress differences on the two schedules. On neither of the schedules did the controllers' stress levels differ from the general population. It was concluded that the stress differences on the two rotation patterns were too slight to be of real significance and a choice between them would have to rest on managerial considerations rather than biomedical ones.

AN (1) AD-A010 231/XAG

FG (2) 010300
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The Annual FAA International Aviation Maintenance Symposium (9th) Held at Washington, D.C. on 11-13 December 1973.

RD (11) Dec 1973

PG (12) 279 Pages

RC (20) Unclassified report

NO (21) See also report dated Nov 72, AD-A010 230.

DE (23) *Aircraft, *Maintenance management, *Meetings

Maintainability, Scheduling, Decision making, Nondestructive testing, Reliability, Management planning and control, Problem solving, Aircraft equipment, Aviation safety, Maintenance personnel

ID (25) *Management by objectives, *Airworthiness, *Reliability management, DOT/4DZ/DA, DOT/5E

AB (27) The document contains papers presented at a symposium relative to management of aircraft maintenance.

AN (1) AD- 773 402/XAG

FG (2) 060700

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA
AERONAUTICAL CENTER

TI (6) Microwave Oven Radiations: Information Paper.

DN (9) Technical rept.

AU (10) Davis, J. A.

RD (11) Nov 1973

PG (12) 63 Pages

RS (14) FAA-TR-AC-213-7

PJ (16) FAA-73-749-130A

RC (20) Unclassified report

DE (23) *Microwave ovens, *Health physics

Safety, Aircraft, Installation, Engineering, Maintenance

ID (25) *Microwave radiobiology, Cardiac pacemakers

AB (27) There is concern about possible health hazards from the operation of microwave ovens in aircraft, particularly to persons wearing a heart pacing device. While certain magazine articles and periodicals have warned of possible hazards, knowledgeable personnel generally minimized the concern. This paper discusses microwave oven radiations and includes guidance on engineering evaluation of aircraft microwave oven installations.

AN (1) AD- 772 512/XAG

FG (2) 010600
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS

TI (6) 1972 U.S. Civil Airmen Statistics.

RD (11) Oct 1973

PG (12) 42 Pages

RC (20) Unclassified report

NO (21) See also AD-754 271.

DE (23) *Civil aviation, *Flight crews

Statistical data, Pilots, Males, Females, Instructors, Classification, Aging(Physiology), Helicopters, Gliders, Students, Commercial planes, Transport aircraft

ID (25) *Pilot certificates, *Nonpilot certificates, *Airman certificates

AB (27) The 1972 U.S. Civil Airmen Statistics is the fourth edition of an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. This information is required to establish more valid relationships between aircraft and airmen and to furnish more realistic bench marks for measuring trends in the civil airmen counts and their overall effect on the various segments of aviation. The distribution of regional data has been revised to

conform to the Ten Region concept.

AN (1) AD- 773 397/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan. Intermittent Positive Control.

DN (9) Engineering and development rept. 1973-1977.

RD (11) Oct 1973

PG (12) 41 Pages

RS (14) FAA-ED-01-3

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Aviation safety
Warning systems, Collisions, Landing aids, Flight testing,
Screens(Displays), Data links

ID (25) IPC(Intermittent Positive Control), Intermittent positive control,
*Collision avoidance

AB (27) The report outlines a research and development program leading to the development and evaluation of the Intermittent Positive Control (IPC) function. This work is being undertaken as part of FAA efforts to improve and upgrade the present air traffic control system. (Author)

AN (1) AD-A016 221/XAG

FG (2) 010500

130100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Slant Visual Range/Approach Light Contact Height Measurement Technique with Data Converter and Remote Readout Panel.

RD (11) 26 Oct 1973

PG (12) 19 Pages

RS (14) FAA-ER-450-042b

RC (20) Unclassified report

DE (23) *Lighting equipment, *Airports
Specifications, Approach lights, Slant range, Runways, Electronic equipment, Automation, Requirements, Quality assurance, Visibility, Altitude, Information systems

ID (25) DOT/4IZ/IC

AB (27) This Engineering Requirement (ER) specifies the work required for the development of a slant visual range/approach light contact height measurement technique utilizing currently available instrumentation

(either a development (engineering) model or an in-service model). The technique and equipment supplied as a result of these efforts will permit advising a pilot approaching an airport under conditions of poor visibility at what altitude the pilot may expect contact with the approach lights and what segment of approach lights will be visible to him at a decision of height of 100 feet.

AN (1) AD- 768 845/XAG

FG (2) 010300

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Interrelationship of FAA-DOT-NASA Programs Relating to Aircraft Cabin Materials Fire.

DN (9) Status rept.

AU (10) Simpson, Colin G.

RD (11) Sep 1973

PG (12) 21 Pages

RS (14) FAA-RD-73-146

RC (20) Unclassified report

DE (23) *AIRCRAFT CABINS, *AIRCRAFT FIRES

MATERIALS, FIRE SAFETY, FLAMMABILITY, GASES, TOXICITY, HAZARDS, SMOKE,
AIRCRAFT EQUIPMENT, FIRE EXTINGUISHERS

AB (27) Aircraft cabin materials fire hazards consisting of flammability, smoke emission, toxic gas emission and flash fire are discussed together with the work ongoing pertinent to these hazards by the FAA and other DOT administrations and the NASA. (Modified author abstracts)

AN (1) AD- 766 898/XAG

FG (2) 090100

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Radar Microwave Link (RML) Antenna Pattern Measurements.

DN (9) Final rept.

AU (10) Hunter, Roger G.

RD (11) Aug 1973

PG (12) 191 Pages

RS (14) FAA-RD-73-118

RC (20) Unclassified report
DE (23) (*radar antennas, *antenna radiation patterns)
microwave relay systems, radar reflectors, measurement, antenna masts,
gain, data
ID (25) an/fsm-17
AB (27) The report contains the results of the radar microwave link (RML)
antenna pattern measurements. The data were taken with a C-131
aircraft equipped with a AN/FSM-17 antenna measuring systems. The raw
data from the measurements were converted to values of absolute gain
and processed to form a series of polar plots which are presented.
Absolute gain is defined as the ratio of radiation intensity in a given
direction to the radiation intensity produced by an isotropic radiator
with the same input. (Modified author abstract)

AN (1) AD- 767 454/XAG
FG (2) 110200
131300
200100

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

**TI (6) A Potential Design Window for Supersonic Overflight Based on the
Perceived Level (PLdB) and Glass Damage Probability of Sonic Booms.**

DN (9) Final rept.

AU (10) Higgins, Thomas H.
Carpenter, Larry K.

RD (11) Aug 1973

PG (12) 28 Pages

RS (14) FAA-RD-73-116

RC (20) Unclassified report

DE (23) (*glass, damage), (*supersonic flight, *sonic boom)
jet plane noise, pressure, sonic fatigue, acoustics,
tolerances(physiology)

ID (25) window glass, overpressure, sound pressure, design criteria

AB (27) A potential design window for supersonic overflight based on the
perceived level (PLdB) and glass damage probability of sonic booms is
outlined. The evaluation of a simple operational method of estimating
the perceived level (PLdB) of sonic booms is discussed and compared
with the Fourier transform computer program calculations of Pease based
on the theory of Zepler and Harel. The resulting estimated perceived
levels are in good agreement i.e., within 1 to 2 PLdB of each other in
the important potential certification or design window that is in the
90 to 100 PLdB range. These perceived levels are shown to be

acceptable to 95 to 100 percent of the people exposed to them.
(Modified author abstract)

AN (1) AD- 764 681/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

**TI (6) Engineering and Development Program Plan - Air Traffic Control
Technology.**

RD (11) Jul 1973

PG (12) 48 Pages

RS (14) FAA-ED-16-1

RC (20) Unclassified report

DE (23) (*air traffic control systems, *research management)
cathode ray tube screens, color television tubes, input output devices,
test sets, computers, scheduling, costs

AB (27) The technology program plan is one in a series of program plans
published to document the Engineering and Development activities of the
Federal Aviation Administration (FAA). It describes current and
planned activities to examine advanced concepts and techniques and to
evaluate their application in the Air Traffic Control (ATC)
environment. The program is divided into two major categories: Data
Entry and Display Technology and Advanced Computer Technology. The
National Aviation Facilities Experimental Center (NAFEC) and the
Transportation Systems Center (TSC) are involved in accomplishing this
program. (Author)

AN (1) AD- 771 208/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND**

DEVELOPMENT SERVICE

**TI (6) SRDS Technical Program Document, Fiscal Year 1974 Engineering and
Development Programs.**

RD (11) Jul 1973

PG (12) 182 Pages

RC (20) Unclassified report

DE (23) *Air transportation, *Civil aviation, *Scientific research
Systems engineering, Airports, Aircraft, Planning, Radar, Radar
beacons, Computer programming, Navigation, Communication and radio
systems, Approach, Landing aids, Aviation safety, Control systems,

Airport control towers

ID (25) Research and development, Flight service stations

AB (27) The document contains research and technology resumes which reflect systems research and development service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, accomplishments, requirements, etc.

AN (1) AD- 919 901/XAG

FG (2) 010305

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Concorde 001 Flying Qualities Tests.

DN (9) Technical rept.

AU (10) Abrams, Richard

Tuck, Dennis A.

Benefield, Tommie D.

RD (11) Jul 1973

PG (12) 213 Pages

RS (14) FAA-FS-73-1

RC (20) Unclassified report

AL (22) Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; 7 Jun 74. Other requests for this document must be referred to Administrator, Federal Aviation Administration, Attn: AFS-160. Washington, D. C. 20591.

DE (23) (*Supersonic transports, Flight testing)

Handling, Long range(Distance), Aerodynamic stability, Pitch(Motion), Climbing, Angle of attack, Flight maneuvers, Taxiing, Takeoff, Emergencies, Stalling, Approach, Aircraft landings, Aircraft cabins, Cockpits, Throttling, Redundant components, Turbojet engines, Flight control systems, Mach number, Visibility, Flight instruments, France, Manuals

ID (25) *Concorde aircraft, Concorde 001 aircraft, Flying qualities, Airworthiness

DL (33) 13

AN (1) AD- 763 917/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) D. C. Systems Research and Development Service. United States

Microwave Landing System (MLS) Development Program Symposium.

RD (11) Jun 1973

PG (12) 333 Pages

RS (14) FAA-RD-73-95

PJ (16) FAA-075-325

RC (20) Unclassified report

DE (23) (*glide path systems, *symposia)

microwave equipment, instrument landings, automatic pilots, reviews

ID (25) *landing aids, *microwave equipment

AB (27) The purpose of the meeting was to inform the aviation community of the progress and results achieved to date and to provide an open forum for the exchange of information and views on the program. The document, which is a record of the symposium, includes an overview of the background and current status of the program and detailed information on the four MLS system approaches that will be field tested in the Phase II Feasibility Demonstration Program. (Author)

AN (1) AD- 768 844/XAG

FG (2) 170703

250400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Tandem Electronic Voice Switching (EVS) System.

DN (9) Project plan

AU (10) Schroeder, John F.

RD (11) 01 Jun 1973

PG (12) 144 Pages

RS (14) FAA-RD-73-133

RC (20) Unclassified report

DE (23) (*communication systems, *switching circuits), (*air traffic control systems, communication systems) integrated systems, voice communications, automation, systems engineering

ID (25) air route traffic control centers

AB (27) The Tandem Electronic Voice Switching (EVS) System Project Plan identifies responsibilities and describes events and activities which must be completed in order to integrate the Tandem EVS System with NAS En Route Stage A. Initial emphasis is on the installation and evaluation testing of a preproduction EVS System at NAFEC for which the System Research and Development Service has primary responsibility; however, the plan also addresses the implementation of production systems and provides for the transition of primary responsibility to

the Airway Facilities Service for this activity. The Tandem EVS System Project Plan does not assign responsibilities, but rather amalgamates and synchronizes, the planning of participating organizations with respect to their inherent responsibilities for the Tandem EVS Project. (Author)

AN (1) AD- 768 847/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - Aircraft Noise and Sonic Boom.

RD (11) Jun 1973

PG (12) 38 Pages

RS (14) FAA-ED-20-2

RC (20) Unclassified report

DE (23) (*aircraft noise, acoustic impedance)

jet plane noise, sonic boom, engine noise, stress(physiology), tolerances(physiology), law, planning

ID (25) noise, noise exposure, noise reduction, noise reduction, noise pollution, environmental noise exposure measurement

AB (27) The report describes a program plan designed to provide a data base from which to develop rule making for control and abatement of aircraft noise and sonic boom. Primary objectives are to minimize the environmental impact of aircraft generated noise and sonic boom and to develop prediction, reduction and certification criteria for all categories of aircraft. Development activities currently in progress plus programs planned for a period of approximately five years are described. (Author)

AN (1) AD- 762 034/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - Performance Assurance.

RD (11) May 1973

PG (12) 33 Pages

RS (14) FAA-ED-21-2

RC (20) Unclassified report

DE (23) (*air traffic control systems, management planning and control)

navigational aids, reliability, monitors, maintenance

AB (27) The program plan describes the development activities that are being pursued to enhance overall performance assurance of all air traffic control and navigation facilities within the National Airspace System (NAS). The plan provides detailed information on the objectives, goals, program structure, technical approach, resources, and possible implementation, as well as, general discussions which emphasize the rationale and philosophy which dictates the course of action. This plan is indicated on the basic assumption that improvements and efficiencies in the current methods and concept of facility performance assurance are imperative in the face of continuing facility expansion, maintenance workforce freezes and economy drives. (Author)

AN (1) AD- 762 832/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Fatigue Evaluation of Wing and Associated Structure on Small Airplanes.

DN (9) Final technical rept.

RD (11) May 1973

PG (12) 39 Pages

RS (14) AFS-120-73-2

RC (20) Unclassified report

DE (23) (*airframes, fatigue(mechanics))

wings, structural members, failure(mechanics), cracks, crack propagation, gust loads, life expectancy

ID (25) general aviation aircraft, fatigue(mechanics)

AB (27) Methods for evaluating the wing and associated structure for fatigue under the 'safe life' and 'fail safe' concept are outlined. Detailed procedures and scatter factors are given for full scale fatigue test, component test and the analytical methods of substantiation. Loading spectra are given for the various types of aircraft and usage. (Author)

AN (1) AD- 768 846/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) User's Manual for the Los Angeles Basin Standard Traffic Model (Card Deck/Character Tape Version).

DN (9) Final rept.

AU (10) Hildenberger, Mark
RD (11) May 1973
PG (12) 16 Pages
RS (14) FAA-RD-73-89
RC (20) Unclassified report
DE (23) *AIR TRAFFIC
CALIFORNIA, INSTRUCTION MANUALS
ID (25) 1982 Los angeles basin standard traffic model
AB (27) The document is directed toward the users of the 1982 Los Angeles Basin Standard Traffic Model data. Precise descriptions of the recorded information fields and their corresponding formats are given. Also included are the complete lists of the 25 major-size airports investigated and the 73 distinct aircraft types simulated. (Modified author abstract)

AN (1) AD- 764 771/XAG
FG (2) 130200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

ECONOMICS

TI (6) Washington-New York Air and Rail Passenger Traffic, 1972.
DN (9) Working paper
RD (11) Apr 1973
PG (12) 17 Pages
RC (20) Unclassified report
DE (23) (*air traffic, reviews), (*railroads, traffic)
district of columbia, new york, data, tables(data)
AB (27) During calendar year 1972, there was a combined total of 3.1 million air carrier and rail through-passenger-trips between Washington and New York/Newark. This was an increase of almost seven percent over 1971. Airline passengers increased by three percent while rail passengers climbed by 19 percent.

AN (1) AD- 765 009/XAG
FG (2) 050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan-Aircraft Safety.
RD (11) Apr 1973
PG (12) 45 Pages
RS (14) FAA-ED-18-1

RC (20) Unclassified report
DE (23) (*aviation safety, management planning and control)
research management, fire safety, planning, airframes, jet engines, jet engine fuels, warning systems, detection
ID (25) management information systems
AB (27) The aircraft safety program engineering and development plan describes the objectives, the scope of work, and the funding requirements to meet the Federal Aviation Administration's research needs in aircraft safety for the 1973-1982 period. The plan covers work in fire safety, general aviation aircraft safety, transport safety, quiet short haul air transport (QSAT), and aviation security. (Author)

AN (1) AD- 758 588/XAG

FG (2) 010500
200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF ENVIRONMENTAL QUALITY

TI (6) Aircraft Sound Description System Background and Application.

DN (9) Final rept.
AU (10) Cruz,J. E.
RD (11) Mar 1973
PG (12) 61 Pages
RS (14) FAA-EQ-73-3
RC (20) Unclassified report
DE (23) (*aircraft noise, *airports)
periodic variations, exposure(physiology), thresholds(physiology), measurement, takeoff, aircraft landings
ID (25) *noise pollution, *noise exposure, *exposure time
AB (27) An objective approach to describing aircraft sound levels for areas in the vicinity of airports called 'Aircraft Sound Description System' (ASDS), suitable for both manual and computer application, is set forth. The basic premise of the concept is to state exposure to aircraft sound in terms of the amount of time that sound levels exceed a preselected threshold value. The rationale supporting the selection of this procedure, the selection of the threshold value, as well as some operating time constants are covered together with two hypothetical applications. (Author Modified Abstract)

AN (1) AD- 761 560/XAG

FG (2) 170703
010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Summary of Near Term Engineering and Development Program Plans for Ground Based Separation Assurance.

DN (9) Summary rept.

RD (11) Mar 1973

PG (12) 26 Pages

RS (14) FAA-EM-73-7

RC (20) Unclassified report

DE (23) *AVIATION SAFETY, *AIR TRAFFIC CONTROL TERMINAL AREAS RADAR LANDING CONTROL, RADIO BEACONS, FLIGHT PATHS, DECISION MAKING,

ALGORITHMS, AIR TRAFFIC CONTROLLERS

ID (25) *collision avoidance

AB (27) The report summarizes the several engineering and development activities directly involved with the development of automation capabilities to aid the separation assurance function of the ground based Air Traffic Control (ATC) system. Separation assurance capabilities for the operational NAS En Route Stage A System are being developed in E and D Program 12 - En Route Control. The analogous development work for terminal systems, ARTS 3 and ARTS 2, is being accomplished in Program 14 - Terminal/Tower Control. The initial design of future capabilities, such as Intermittent Positive Control for Phase 2 of the Upgraded Third Generation ATC System (which depends upon the surveillance/communications provided by the Discrete Address Beacon System), is being performed under E and D Program 01 -Systems. (Modified author abstract)

AN (1) AD- 763 549/XAG

FG (2) 170703

250200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan-Satellite Experimentation.

RD (11) Mar 1973

PG (12) 52 Pages

PJ (16) FAA-171-251

RN (18) FAA-ED-17-1

RC (20) Unclassified report

DE (23) (*air traffic control systems, radio relay systems), (*radio relay systems, communication satellites(active))

multipath transmission, data transmission systems, experimental design

ID (25) ats-5 satellite

AB (27) This Program Plan is one of a number of Program Plans which cover FAA's engineering and development activities. Two of these Program Plans cover work devoted to the application of space technology to air traffic control. One plan (AEROSAT Program Plan, FAA-ED-17-2), covers the planning, development, engineering, experimentation, and evaluation of an aeronautical satellite communication capability over the Atlantic Ocean while this plan covers the development and design data and techniques through analysis and experimentation. (Author)

AN (1) AD- 763 556/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Aircraft as an Instrument of Self Destruction

AU (10) Yanowitch,Robert E.

Bergin,Jack M.

Yanowitch,Elizabeth A.

RD (11) Mar 1973

PG (12) 8 Pages

RS (14) FAA-AM-73-5

RC (20) Unclassified report

DE (23) (*pilots, stress(psychology)), (*stress(psychology), *aviation accidents)

attitudes(psychology), analysis, man machine systems, psychological tests, behavior

ID (25) suicide

AB (27) Often the relationship between the pilot and his aircraft is such that the aircraft may be thought of as an extension of the pilot himself during the act of flight. If this pilot accumulates stress in his life with which he can no longer adequately cope, he may engage in self-destructive acts, some of these within the context of his flying activities. The competent pilot practices and acquires skills which help him to deal with the stress of demanding flight situations. However, if this individual exceeds his piloting capabilities, or is already coping with a high stress level to his maximum capacity, the additional stress of a particular flight situation may overload his total coping ability and destruction of self, both psychologically and physically, will occur. (Author)

AN (1) AD- 756 811/XAG

FG (2) 010600
230200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA FLIGHT STANDARDS

TECHNICAL DIV

TI (6) A Summary of Crashworthiness Information of Small Airplanes.

DN (9) Technical rept.

AU (10) Pennybaker,A. L.

Ross,James W., Jr.

Wilson,George L.

RD (11) Feb 1973

PG (12) 124 Pages

RS (14) FAA-TR-FS-70-592-120A

RC (20) Unclassified report

DE (23) (*civil aviation, aviation safety)

aviation accidents, safety belts, human factors engineering, hazards, tolerances(physiology), airframes, design

ID (25) *general aviation aircraft, crash landing, *crashworthiness

AB (27) The report presents a discussion of crashworthiness data for small airplanes. It relates crash test data to airframe parameters and discusses the following areas of "interior design": occupant restraint; design and testing of seats; instrument panels, controls, and other occupant surroundings. An appendix is included which discusses human tolerance to impact deceleration. (Author)

AN (1) AD- 758 223/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - Weather.

RD (11) Feb 1973

PG (12) 60 Pages

RS (14) FAA-ED-15-1

RC (20) Unclassified report

DE (23) (*aviation safety, *weather forecasting)

weather communications, visibility, ceiling, clear air turbulence, storms, wind, weather stations, aviation accidents

AB (27) The plan describes the FAA research and development activities relating to aviation weather. The plan has been structured with the primary purpose of providing tailored weather information for use by pilots and air traffic controllers. There are two program subdivisions (program

elements) in the plan: (a) Weather Data Acquisition, generally involving the development of measurement techniques and hardware devices to be used in gathering precise weather data; and (b) Weather Data Processing and Distribution, concerned primarily with converting raw weather data into meaningful information and disseminating this information to pilots and air traffic controllers. The plan describes progress and accomplishments, current objectives, prospects for products and funding data for the projects involved. (Author)

AN (1) AD- 760 635/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Engineering and Development Program Plan - Navigation.

RD (11) Jan 1973

PG (12) 56 Pages

RS (14) FAA-ED-04-1

RC (20) Unclassified report

DE (23) (*navigational aids, management planning and control)

distance measuring equipment, data transmission systems, air traffic, navigation satellites, air traffic control systems, radio navigation, planning

ID (25) vor

AB (27) The report contains 2 program development plans that provide the framework for the development of CONUS and Oceanic Navigation Systems necessary for projected traffic loads into the 1980's. Program goals, approach, development activities, and expected results are set forth. The program is based on the continuing role of VORTAC as the primary means of navigation in the airways system into the 1980's. Concurrently programs have been established to determine the feasibility for adoption of VLF systems, such as Omega, for aviation users in both oceanic and continental applications.

AN (1) AD- 770 794/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) A Synchronized Discrete-Address Beacon System

AU (10) Amlie,Thomas S.

RD (11) 04 Jan 1973

PG (12) 10 Pages
RS (14) FAA-EM-74-3
RC (20) Unclassified report
AL (22) Availability: Pub. in IEEE Transactions on Communications, vCOM-21 n5
p421-426 May 73.
DE (23) *Air traffic control systems, *Radar beacons
Synchronism, Interrogation
ID (25) DABS(Discrete Address Beacon Systems), Discrete address beacon systems,
ATRCRBS(Air Traffic Control Radar Beacon Systems), Air traffic control
radar beacon systems
AB (27) A measure of discipline must be imposed on the ground-based
interrogator complex if a new discrete-address beacon system is to be
compatible when introduced into the present air traffic control system.
It is postulated that this discipline, if imposed in a certain manner,
will provide a surveillance system that will provide several additional
benefits and services to the aircraft operator at minimum cost and
complexity. (Author)
20

AN (1) AD- 773 571/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) Annual Report of Operations under the Airport and Airway Development
Act (4th), Fiscal Year Ended June 30, 1973.
RD (11) 1973
PG (12) 105 Pages
RC (20) Unclassified report
NO (21) See also report dated 1972, AD-754 325.
DE (23) *Airports
Management planning, Federal budgets, Civil aviation, Environment
ID (25) Airport and Airway Development Act, Airport Development Acceleration
Act
AB (27) The Airports Program covers the identification, planning, and
development of the Nation's system of public airports to serve the
needs of civil aviation. Principal activities in this program include:
Preparation of a National Airport System Plan; administering a program
of grants-in-aid for airport development and airport planning,
engineering and safety standards; airport certification and inspection
for safety of operations; participating in transfers of Federal land
and property for civil airport use; field collection of data for the
airport data program; and assuring that public agencies receiving
Federal assistance continue to operate their airports for the benefit
of the public in accordance with their agreements.

AN (1) AD- 756 346/XAG
FG (2) 170703
170900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
SYSTEMS
ENGINEERING MANAGEMENT
TI (6) Engineering and Development Program Plan - Air Traffic Control
Surveillance Radar
AU (10) Moses, Harry C.
RD (11) Dec 1972
PG (12) 64 Pages
RN (18) FAA-ED-02-1
RC (20) Unclassified report
DE (23) (*air traffic control systems, *search radar)
commercial planes, aviation safety, radar stations, radar cross
sections, meteorological radar, transponders, planning
ID (25) ground clutter
AB (27) Although the air traffic control beacon system is rapidly growing in
usage, and a vigorous development program to resolve performance
limitations is in progress, the need for a primary radar surveillance
system to be fully operational over the next decade clearly exists.
This document discusses the role of the primary radar system, its
performance deficiencies, and technical development programs to be
undertaken during this time period, to assure that the total air
traffic control surveillance requirements will be met. (Author)

AN (1) AD-A010 230/XAG
FG (2) 010300
050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) The Annual FAA International Aviation Maintenance Symposium (8th) Held
at Oklahoma City, Oklahoma on 28-30 November 1972
AU (10) Beale, Leroy H.
RD (11) Nov 1972
PG (12) 294 Pages
RC (20) Unclassified report
NO (21) See also report dated Dec 73, AD-A010 231.
DE (23) *Aircraft, *Maintenance management, *Meetings
Maintainability, Scheduling, Decision making, Nondestructive testing,
Reliability, Management planning and control, Problem solving, Aircraft
equipment, Training, Maintenance personnel

ID (25) *Management by objectives, *Airworthiness, *Reliability management, DOT/4DZ/DA, DOT/5E
AB (27) The document contains papers presented at a symposium relative to management of aircraft maintenance.

AN (1) AD- 754 264/XAG

**FG (2) 010500
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - All Weather Landing.

DN (9) Final rept.

RD (11) 01 Oct 1972

PG (12) 39 Pages

RS (14) FAA-ED-07-3

RC (20) Unclassified report

DE (23) (*all weather aviation, instrument landings), (*air traffic control systems, instrument landings) management planning and control

ID (25) instrument landing systems

AB (27) The plan describes all FAA development activities funded in the all weather landing program including electronic and visual guidance airborne systems, and data collection. It also discusses related projects funded in other programs. The related projects include weather measurement, ground guidance and control, fog dispersal, etc. (Author)

AN (1) AD- 757 171/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - Airport Pavement.

RD (11) Oct 1972

PG (12) 42 Pages

RS (14) FAA-ED-08-2

RC (20) Unclassified report

DE (23) (*pavements, design), (*airports, *runways) construction, construction materials, concrete, reinforcing materials, surface roughness, nondestructive testing, quality control

ID (25) design criteria, evaluation

AB (27) The Systems Research and Development Service of the FAA is conducting a

research program for upgrading airport pavement technology by a coordinated contractor/in-house/industry effort. Three areas of action are design criteria, materials and construction, and test and evaluation. By the end of CY 1973 most of the current design, field test and evaluation efforts based on existing design technology will be completed and results of the study will be handed off to Airports Service for implementation by the regional authorities. To a great extent this information will supplement our existing technology which was derived from extrapolation of military and highway flexible and rigid pavement designs and post-World War 2 experience. (Author Modified Abstract)

AN (1) AD- 754 271/XAG

**FG (2) 010600
050900**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) 1971 U. S. Civil Airmen Statistics.

RD (11) Sep 1972

PG (12) 41 Pages

RC (20) Unclassified report

NO (21) See also report dated Jun 71, AD-732 568.

DE (23) (*flight crews, statistical data), (*civil aviation, flight crews) pilots, commercial planes, transport aircraft, personnel management, tables(data)

ID (25) *nonpilot certificates, *airman certificates, *pilot certificates

AB (27) The collection and dissemination of expanded aircraft data have created a need for more compatible airmen statistics. This information is required to establish more valid relationships between aircraft and airmen and to furnish more realistic bench marks for measuring trends in the civil airmen counts and their overall effect on the various segments of aviation. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained by the Data Services Division, of the FAA Aeronautical Center, at Oklahoma City, Oklahoma, indicating active pilot and active nonpilot certificates held and airman certificates issued. (Author)

AN (1) AD- 757 174/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

ECONOMICS

TI (6) Aviation Forecasts. Fiscal Years 1973-1984.

RD (11) Sep 1972

PG (12) 48 Pages

RC (20) Unclassified report

NO (21) See also report dated Sep 71, AD-738 360.

DE (23) (*civil aviation, predictions)

air traffic, aircraft engines, aircraft industry, fuel consumption, airports, air traffic control systems, pilots

ID (25) forecasting, general aviation aircraft

AB (27) ;Contents: Aviation industry forecasts (Air carrier traffic; Air

carrier fleet; General aviation flying and aircraft fleet; Domestic

aviation fuel consumption; Civil aircraft and engine production); FAA

air traffic activity forecasts; Airmen forecasts.

AN (1) AD- 763 547/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY AND PLANS

TI (6) An Evaluation Study of the Airport Development-Aid Program, FY 1971-1972.

DN (9) Final rept.

AU (10) Uhl,Raymond T.

RD (11) Sep 1972

PG (12) 268 Pages

RS (14) FAA-AV-72-4

RC (20) Unclassified report

DE (23) (*airports, *urban planning), (*federal budgets, airports)

air transportation, economics, reviews, systems engineering, statistical distributions, air traffic, effectiveness

AB (27) This report reviews and analyses air carrier/reliever airport grant allocations made in the first two years of the operation of the Airport Development-aid Program (fiscal years 1971-1972) in an attempt to determine the effectiveness of the program. In doing so, it looks at the nature of aeronautical demand, national airport system requirements, reviews ADAP program procedures, and analyzes the characteristics of airport grant allocations. Finally, the report considers the program with respect to congestion relief and suggests potential program adjustments to increase the effectiveness of the program.

AN (1) AD- 746 581/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Evaluation of 360 deg. Strobe Lights.

DN (9) Final technical rept.

AU (10) Murphy,D. D.

Parr, Frank

RD (11) Jul 1972

PG (12) 54 Pages

RS (14) FAA-FS-600-5

PJ (16) FAA-FS-600-71-6

RC (20) Unclassified report

DE (23) (*runways, marker lights), (*marker lights, reliability)

landing aids, aircraft landings, questionnaires, intensity, night vision, visibility, approach lights, identification

ID (25) runway alignment indicator lights, *stroboscopes

AN (1) AD- 746 871/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA NATIONAL FLIGHT

INSPECTION DIV

TI (6) Evaluation of Approach Procedures for ILS Back Course with Glide Slope.

DN (9) Final technical rept.

AU (10) Hunting,Allan W.

RD (11) Jul 1972

PG (12) 36 Pages

RN (18) FAA-FS-600-8

RC (20) Unclassified report

DE (23) (*glide path systems, *approach)

instrument landings, radio transmission, aircraft antennas, flight paths, terminal flight facilities, questionnaires

ID (25) evaluation

AB (27) An operational evaluation was performed to compare ILS back course approaches with front course approaches in an effort to determine flyability problems associated with back course ILS with glide slope and the appropriate obstacle clearances to be applied. 32 simulated approaches were flown in the B720 flight simulator. 63 hooded approaches were flown in 6 different aircraft. Facility and airborne systems included Back and Front courses; Localizer only and Localizer with Glide Slope; Normal and Reverse course sensing; and all were flown using raw ILS data for guidance. A questionnaire was filled out on each

subject pilot at the end of his runs. Heights above touchdown at which his guidance became usable were computed from simulator tracings and data logs. (Authors)

AN (1) AD- 747 070/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) VOR - TACAN Low Altitude Flight Check Summary.

DN (9) Final rept.

AU (10) Bassett, Frank W.

RD (11) Jul 1972

PG (12) 46 Pages

RS (14) FAA-RD-72-73

PJ (16) FAA-300-041

RC (20) Unclassified report

DE (23) *FLIGHT PATHS, *NAVIGATIONAL AIDS

LOW ALTITUDE, DISTANCE MEASURING EQUIPMENT, DOPPLER NAVIGATION, DIRECTION FINDING, ERRORS, THEODOLITES, STATISTICAL DATA

ID (25) VOR, TACAN

AB (27) The report is a summary of flight check data of VOR-TACAN facilities during the time period of 1961 thru 1969. The data shown are taken from bearing error curves contained in the flight inspection reports at the Flight Standards Service office in the Washington Headquarters. The Mean and one sigma values were calculated from eight points. (Author)

AN (1) AD- 749 307/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Development Program Plan - Oceanic Air Traffic Control Automation.

RD (11) 27 Jul 1972

PG (12) 157 Pages

RS (14) FAA-ED-10-1

RC (20) Unclassified report

DE (23) (*air traffic control systems, automation)

scheduling, flight paths, data processing, data transmission systems, data storage systems, display systems, input output devices, costs, reliability, management planning and control

AB (27) The Technical Development Plan (TDP) is one in a series of program plans published to document the Engineering and Development activities of the Federal Aviation Administration (FAA). It provides a functional description, a technical approach and a management and fiscal plan for the development of an Automated Oceanic Air Traffic Control (ATC) System. This system is necessary to provide improvements and efficiencies in the current manual method of ATC in the oceanic environment. (Author)

AN (1) AD- 751 397/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) G Effects on the Pilot During Aerobatics

AU (10) Mohler, Stanley R.

RD (11) Jul 1972

PG (12) 23 Pages

RS (14) FAA-AM-72-28

RC (20) Unclassified report

DE (23) (*ACCELERATION TOLERANCE, *PILOTS)

AERODYNAMICS, FLIGHT TESTING, HUMAN FACTORS ENGINEERING, PERFORMANCE(HUMAN), FLIGHT CLOTHING, MANEUVERABILITY

ID (25) AEROBATICS

AB (27) Sport, precision, and competitive aerobatics, and especially air show and demonstration flying are enjoying a rebirth of interest exceeding that of the 1930's. Improved aerobatic airplanes and power plants are in the hands of more civilian pilots than ever before. These aircraft enable the pilot to easily initiate maneuvers which exceed human tolerances, yet not overstress the aircraft. Military aircraft reached this point in World War II and the G-suit was perfected to protect the pilot. The military groups still use the G-suit but this equipment is impractical for most civil aerobatic activities. The paper provides information on (1) the nature of aerobatic G forces, (2) human physiology in relation to G forces, (3) human tolerances to various levels and times of exposure to G forces, and (4) means by which tolerance to G forces may be increased in terms of the general physical condition and the time during the maneuver when the G forces are imposed. (Author)

AN (1) AD- 752 258/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

ECONOMICS

TI (6) An Evaluation of the ARTS (Automated Radar Terminal System) III Level of Automation (Third Lot Procurement).

DN (9) Final rept.

AU (10) Horowitz, Seymour M.

RD (11) Jul 1972

PG (12) 158 Pages

RC (20) Unclassified report

DE (23) (*air traffic control systems, radar equipment)
aviation safety, air traffic, simulation, performance(engineering),
cost effectiveness

ID (25) benefit cost analysis

AB (27) An evaluation of a new Automated Radar Terminal System (ARTS III) for controlling air traffic was made by simulating the air traffic environment in a statistically balanced experimental setting. Similar groups of air traffic controllers using both the ARTS III and the older system were presented with identical traffic patterns. A large number of measures of system performance were taken. Differences favoring the ARTS system were found in the most critical of these measures, safety, and were translated into dollar benefits resulting from an expected reduction in mid-air collisions. A comparison of these dollar benefits with the incremental costs to install and operate the new equipment favored its installation. (Author)

AN (1) AD- 754 635/XAG

**FG (2) 010600
050100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Systems Research and Development Service (SRDS) Fiscal Year 1973/74 Technical Program Document.

DN (9) Annual rept.

RD (11) Jul 1972

PG (12) 178 Pages

RC (20) Unclassified report

NO (21) Report on Engineering and Development Programs.

DE (23) (*civil aviation, *research management)
terminal flight facilities, airport radar systems, aircraft landings,
navigation satellites, communication systems, aviation safety,
scheduling, air traffic control systems, aviation medicine, sonic boom,

air pollution, ordnance locators

AB (27) The Technical Program Document (TPD) contains research and technology resumes which reflect systems research and development service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, accomplishments, requirements, etc. The TPD is structured according to the following 21 Engineering and Development Programs: system, radar, ATRBS, navigation, PWI/CAS, Communications, landing system, runways/taxiways, landside, oceanic, flow control, enroute control, flight service stations, terminal tower control, weather, technology, satellites, aircraft safety, aviation medicine, environmental protection, and support.

AN (1) AD- 747 869/XAG

**FG (2) 061100
240500**

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK AERONAUTICAL CENTER

TI (6) The Effects of 2,2 Dichlorovinyl Dimethyl Phosphate (DDVP) Used as an Aircraft Disinsectant.

DN (9) Final technical rept.

AU (10) Ross, James W., Jr

RD (11) Jun 1972

PG (12) 107 Pages

RN (18) FAA-FS-70-601-120A

RC (20) Unclassified report

NO (21) Revision of report dated Dec 71.

DE (23) *INSECTICIDES, *TOXICITY, *CORROSIVE GASES
AIRCRAFT CABINS, FLAMMABILITY, PHOSPHATES, CHLORINE COMPOUNDS,
HALOGENATED HYDROCARBONS, ELECTRONIC EQUIPMENT,
EXPOSURE (PHYSIOLOGY),
CORROSION, PUBLIC HEALTH, HAZARDS, CONFINED ENVIRONMENTS

ID (25) *ddvp pesticides

AB (27) Pursuant to disagreements between the U.S. Public Health Service and elements of the U.S. aircraft and airline industry, the FAA undertook a study to assess alleged hazards of exposing aircraft and passengers/crew to DDVP vapor for insecticidal purposes on international flights. The study criteria focused on the effects of multiple exposure to the proposed disinsection environment under representative flight conditions. Particular relationships considered were: (1) human toxicology at cabin altitude, (2) flammability characteristics of cabin decorative materials, (3) performance of electronic/avionic equipment, and (4) corrosion of airframe components.

(Author)

AN (1) AD- 748 901/XAG

FG (2) 170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS**

TI (6) Air Traffic Patterns for IFR and VFR Aviation, Calendar Year 1971.

RD (11) Jun 1972

PG (12) 154 Pages

RC (20) Unclassified report

NO (21) See also report dated Nov 71, AD-735 970.

DE (23) (*air traffic control systems, statistical data)
civil aviation, military transportation, transport aircraft, flight
paths, periodic variations, terminal flight facilities

ID (25) *flight plans, ifr(instrument flight rules), instrument flight rules,
vfr(visual flight rules), visual flight rules

AB (27) The report presents a detailed record of flight plans filed at flight
service stations and combined station/towers as collected in a
2-percent random sample of all Instrument Flight Rules (IFR) and Visual
Flight Rules (VFR) flight plans filed in the 50 states and the ARTC
area of San Juan, Puerto Rico. These data furnished the various
Offices and Services of the Federal Aviation Administration with
terminal and enroute air traffic activity for use in planning and
management of the air traffic control system. (Author)

AN (1) AD-A000 013/XAG

FG (2) 010309

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) Service Experience with Liquid Nitrogen Fuel Tank Inerting System in
FAA DC-9 Aircraft, N119.**

DN (9) Final rept.

AU (10) Haddad, Joseph
McAdoo, William C.
Ball, Oscar E.

RD (11) Jun 1972

PG (12) 53 Pages

RS (14) FAA-FS-140-72-1

RC (20) Unclassified report

DE (23) *JET TRANSPORT AIRCRAFT, *FUEL TANKS, *FIRE SUPPRESSION
COMMERCIAL AIRCRAFT, VAPORS, FIRE PROTECTION, LIQUID NITROGEN,

SUPPRESSION, FIRE SAFETY

ID (25) DC-9 aircraft, *Fuel inerting systems

AB (27) The purpose of this project is to determine the nitrogen consumption,
system reliability, and maintenance burden and costs which are
associated with the installation and operation of a liquid nitrogen
fuel tank inerting system installed in the FAA DC-9 airplane, N119.
The data can be extrapolated to a typical airline type of operation of
a DC-9 and other jet transport aircraft. The FAA installed a liquid
nitrogen inerting system in the DC-9 to demonstrate the availability of
a practical system to provide improved protection against fuel system
fire and explosion. The effectiveness of this system in controlling
the oxygen concentration at below 9%, under all conditions for the
prevention or suppression of fire and explosion within the fuel tanks
and venting systems in the event of an accidental occurrence of an
ignition source, was demonstrated during a flight test program.
(Modified author abstract)

AN (1) AD- 744 134/XAG

FG (2) 040200

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

**TI (6) Statistical Analysis of Meteorological Parameters during Fog at 45 U.
S. Airports.**

DN (9) Final rept.

AU (10) Marut, John K.
Kuas, Kenneth A.
Melewicz, Frank V.
Coons, Frank G.
Van Duyne, Edward

RD (11) May 1972

PG (12) 263 Pages

RS (14) FAA-RD-72-39

PJ (16) FAA-081-261-032

RC (20) Unclassified report

DE (23) (*fog, statistical analysis), (*airports, visibility)
scattering, design, statistical data, wind, velocity, periodic
variations, atmospheric temperature, diffusion, aviation safety

ID (25) wind direction, wind velocity, fog dispersal

AB (27) Pertinent climatological data are analyzed for fog conditions
(prevailing visibility 1/2 mile and less without precipitation) at 45
U. S. airports for the ten year period 1956-1965. These data are
considered essential for use in the design of systems to disperse

and/or prevent fog at airports. Tables and statistical values are included for: wind speed vs. frequency, wind direction vs frequency, wind direction vs wind speed, visibility vs frequency, temperature vs frequency and cumulative totals for all airports. An additional analysis is included for fog at temperatures less than 33 deg. to include wind direction vs frequency, wind direction vs wind speed, wind rose data and temperature vs frequency. Monthly fog frequencies are stated for both cold and warm fog. (Author)

AN (1) AD- 742 631/XAG

FG (2) 010200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE

TI (6) Evaluation of Executive Jet Approach Angles.

DN (9) Final rept.

AU (10) Parr, Frank

RD (11) Apr 1972

PG (12) 74 Pages

RS (14) FAA-FS-600-7

RC (20) Unclassified report

DE (23) *INSTRUMENT LANDINGS, *APPROACH, *JET TRANSPORT AIRCRAFT APPROACH, COMMERCIAL AIRCRAFT, INSTRUMENT FLIGHT, FLIGHT TESTING

ID (25) t-39 aircraft, c-140 aircraft, evaluation

AB (27) Evaluations were flown in the Aero Jet Commander, Gates Lear Jet, North American Sabreliner, and Lockheed JetStar. Approach slope angles were varied from approximately 3 degrees up to almost 7 degrees. Flight parameters were measured in the areas of descent airspeed, power requirements in flare, flyability, sink rates, threshold crossing heights, and touchdown distances. Objective and subjective measurements were made. It was found that when approach slope angles above 4 degrees (approximate minimums of 400 feet altitude - 1 mile visibility) were used they were accompanied by problems of power requirement, flyability, high sink rates, and long touchdown distances. (Author)

AN (1) AD- 745 257/XAG

FG (2) 010200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) Crash Survival Analysis of 16 Agricultural Aircraft Accidents

AU (10) Swearingen, J. J.

Wallace, T. F.

Blethrow, J. G.

Rowlan, D. E.

RD (11) Apr 1972

PG (12) 27 Pages

PJ (16) FAA-AM-A-72-PRS-37, FAA-AM-A-71-PRS-37

RN (18) FAA-AM-72-15

RC (20) Unclassified report

DE (23) *AGRICULTURE, *AVIATION ACCIDENTS

SURVIVAL(PERSONNEL), ENGINE MOUNTS, COCKPITS, SAFETY BELTS, REPORTS,

STATISTICAL ANALYSIS, CRASH INJURIES, DAMAGE ASSESSMENT, MORTALITY RATE, AIRCRAFT SEATS

ID (25) *aircraft, *crash resistance, energy absorbers

AB (27) The study presents pertinent findings from on-the-scene investigations to evaluate the crashworthiness of the present fleet of agricultural applicator aircraft. A detailed presentation of 16 crashes illustrates the fact that most of these specialized aircraft structures are well designed to protect the pilot, even in severe crashes. Most injuries and deaths of aerial applicator pilots are not attributable to failure of the cockpit structure itself, but rather to factors associated with (1) pilot restraint equipment, (2) seat failures, (3) failure of the roll-over structure, and (4) a lack of heat impact attenuators at the top of the instrument panel. (Author)

AN (1) AD- 740 293/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Air Traffic Control Radar Systems Definition Report

AU (10) Moses, Harry C.

RD (11) Mar 1972

PG (12) 77 Pages

RS (14) FAA-EM-72-1

RC (20) Unclassified report

DE (23) (*airport radar systems, reviews)

search radar, air traffic control systems, operation, costs

AB (27) The report defines the existing air traffic control radars with respect to quantity, type of system, site location, operational function, and performance characteristics. An appendix includes detailed functional block diagrams and additional performance data. (Author)

AN (1) AD- 740 699/XAG

FG (2) 010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Engineering and Program Development Goals Achievements Trends.

DN (9) Rept. for 1 Apr 71-31 Mar 72.

RD (11) 31 Mar 1972

PG (12) 169 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, systems engineering), (*management planning and control, civil aviation) satellites(artificial), vertical takeoff aircraft, air traffic control systems, radar equipment, beacons, navigation, communication systems, aviation safety, human factors engineering, aircraft landings, landing fields, deployment, towers, weather, computer programming, environment

ID (25) overwater operations

AB (27) The report is intended to serve the needs of FAA top management, DOT, FAA services, offices, regions, centers, and the aviation community. It covers engineering and development progress for the period April 1971 through March 1972. Programs include systems engineering management, systems research and development, and support.

AN (1) AD- 755 884/XAG

FG (2) 010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The National Aviation System Policy Summary, 1972. Appendix 1.

RD (11) Mar 1972

PG (12) 266 Pages

RC (20) Unclassified report

NO (21) Previously announced as N72-25949. See also Appendix 2, AD-755 893.

AL (22) Availability: Paper copy available from GPO \$2.25 as stock no. 5007-0175.

DE (23) (*civil aviation, *management planning and control) airports, air traffic control systems, automation, instrument flight, data transmission systems, communication and radio systems, air traffic control terminal areas, aviation safety, landing aids, air traffic, data processing, meteorological radar, rescues, navigational aids, military operations

ID (25) air route traffic control centers, air space allocation, flight service stations, enroute traffic control systems

AB (27) ;Contents: The shape of the next ten years; En route control and services; Terminal area control and services; Flight services; Airspace allocation and rules; En route navigation aids; Landing aids; System support; Airports; Manpower and training; Environment, and Regulatory functions and aviation safety.

21

AN (1) AD- 755 893/XAG

FG (2) 010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The National Aviation System Plan, 1973-1982. Appendix 2.

RD (11) Mar 1972

PG (12) 230 Pages

RC (20) Unclassified report

NO (21) Previously announced as N72-25950. See also Appendix 1, AD-755 884.

AL (22) Availability: Paper copy available from GPO \$2.00 as stock no. 50007-0176.

DE (23) (*civil aviation, *management planning and control) airports, automation, instrument flight, data transmission systems, communication and radio systems, air traffic control terminal areas, aviation personnel, aviation safety, landing aids, air traffic, data processing, meteorological radar, rescue, navigational aids, military operations

ID (25) air route traffic control centers, air space allocation, flight service stations, enroute traffic control systems

AB (27) ;Contents: The shape of the next ten years; En route control and services; Terminal area control and services; Flight services; Airspace allocation and rules; En route navigation aids; Landing aids; System support; Airports; Manpower; Engineering and development.

21

AN (1) AD- 739 943/XAG

FG (2) 010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) The Benefits of the Use of Shoulder Harness in General Aviation Aircraft

AU (10) Sirkis, Joseph A.
RD (11) Feb 1972
PG (12) 8 Pages
RS (14) FAA-AM-72-3
RC (20) Unclassified report
DE (23) (*SAFETY BELTS, *CIVIL AVIATION), (*AVIATION ACCIDENTS, SURVIVAL(PERSONNEL))
CRASH INJURIES, SAFETY, EFFICIENCY, STATISTICAL DATA, PREDICTIONS
AB (27) The installation and use of shoulder harnesses is a practical and relatively inexpensive solution to the problem of maintaining separation between man and machine during an aircraft crash sequence. The addition of shoulder harness to the tiedown chain of the general aviation aircraft occupant will increase the probability of the user surviving a severe crash and minimize injuries resulting from light-to-moderate crashes. (Author)

AN (1) AD- 739 944/XAG
FG (2) 010200
131200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL INST

TI (6) Effectiveness of Restraint Equipment in Enclosed Areas

AU (10) Lowrey, D. L.
Langston, E. D.
Reed, W.
Swearingen, John J.
RD (11) Feb 1972
PG (12) 29 Pages
PJ (16) FAA-AM-A-71-PRS-37
RN (18) FAA-AM-72-6

RC (20) Unclassified report
DE (23) *AVIATION MEDICINE, *SAFETY BELTS, *AVIATION SAFETY WOUNDS AND INJURIES, DECELERATION

ID (25) general aviation aircraft
AB (27) A series of 20-g decelerations of a crash sled was conducted to determine the magnitude of head impact decelerations while wearing various types of restraint equipment in small confined areas. Restraint webbing loads and head impact decelerations are presented for three directions of impact (straight forward, and 90 deg to left and right). Restraint webbing undoubtedly reduces head impact velocities, especially in the forward direction. However, the study shows that in most instances, head strikes may be expected even while using upper and

lower torso restraint because of the close proximity of surrounding structure in general aviation aircraft. Introduction of upper torso restraint along with lap belts in general aviation aircraft will not relieve the need for delethazing surrounding structures. (Author)

AN (1) AD- 736 867/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE

TI (6) Evaluation of VOR Fix Limitations.

DN (9) Final rept.

AU (10) Murphy, D. D.
Hunting, Allan W.
Parr, Frank

RD (11) Jan 1972

PG (12) 63 Pages

RS (14) FAA-FS-460-8

PJ (16) FAA-FS-600-4

RN (18) FAA-FS-600-4

RC (20) Unclassified report

DE (23) *RADIO NAVIGATION, *POSITION FINDING, *APPROACH STANDARDS, FLIGHT TESTING, OKLAHOMA

ID (25) vor, evaluation

AB (27) A Flight Standards evaluation of non-precision (VOR) approach was made to determine whether the final approach fix distance specified in TERPs can be increased without derogation of procedure flyability. Two published VOR procedures and two additional VOR procedures designed for evaluation purposes were flown under simulated instrument conditions for comparison of flyability problems on final approach distances of 3.5, 7.0, 10.5, and 18.5 NM. (Author)

AN (1) AD- 738 464/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Psychosocial Reconstruction Inventory - A Postdictal Instrument in Aircraft Accident Investigation

AU (10) Yanowitch, Robert E.
Mohler, Stanley R.
Nichols, E. A.

RD (11) Jan 1972

PG (12) 8 Pages
RS (14) FAA-AM-72-2
RC (20) Unclassified report
DE (23) (*aviation accidents, aviation medicine), (*pilots, *behavior)
aviation safety, emotions
ID (25) accident investigations
AB (27) A new approach to the investigation of aviation accidents has recently been initiated, utilizing a follow-on to the psychological autopsy. This approach, the psychosocial reconstruction inventory, enables the development of a dynamic, retrospective portrait of the pilot-in-command subsequent to an accident. Twelve fatal general aviation accidents were studied in this way in 1971. When routine accident investigation data are supplemented by a psychocial or 'lifestyle' reconstruction, a much deeper understanding of the cause of the accident often emerges. In addition to the traditional detailed explanation of what happened, it is often possible to determine why the pilot-in-command behaved in a fashion to produce the accident. By increasing pilot insight into the role of emotions and situational stress in accident causation, more effective accident prevention programs should result. (Author)

AN (1) AD- 754 325/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) Annual Report of Operations under the Airport and Airway Development Act (3rd), Fiscal Year Ended June 30, 1972.

RD (11) 1972
PG (12) 91 Pages
RC (20) Unclassified report
NO (21) See also report dated 30 Jun 71, AD-737 040.
DE (23) (*airports, management planning and control)
federal budgets, civil aviation, environment
AB (27) The Airports Program covers the identification, planning, and development of the Nation's system of public airports to serve the needs of civil aviation in the fifty States, Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands, and Guam. (Author)

AN (1) AD- 775 455/XAG
FG (2) 010300
010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Safety thru Effective Maintenance.

RD (11) 09 Dec 1971
PG (12) 349 Pages
RC (20) Unclassified report
NO (21) Proceedings of the Annual FAA International Aviation Maintenance Symposium (7th) Held at Oklahoma City, Okla., on December 7, 8, and 9, 1971. See also report dated Dec 70, AD-746 353.
DE (23) *Aviation safety, *Symposia, *International, *Maintainability
Quality, Aircraft maintenance, Methodology, Standards, Altimeters, Avionics, Inspection, Optics, Engines, Vibration, Failure, Predictions
ID (25) Boeing 747 aircraft, Optical processing, Lockheed 1011 aircraft, DC-10 Aircraft, CF6-6 engines
AB (27) An aircraft maintenance symposium is reported covering such topics as personalized maintenance, analytical techniques, maintainability measurement, safety standards, instrumentation, failure prediction, maintenance quality, inspection responsibilities, aircraft structures, and engine operations.

AN (1) AD- 735 132/XAG

FG (2) 040200
170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE

TI (6) Potential Economic Benefits of Fog Dispersal in the Terminal Area. Part I. Estimating Procedure.

DN (9) Final rept.
RD (11) Nov 1971
PG (12) 225 Pages
RS (14) FAA-RD-71-44-1
PJ (16) FAA-RD-260-001-01R
RC (20) Unclassified report
DE (23) (*air traffic control terminal areas, *fog)
air traffic, costs, economics
ID (25) weather modification, fog dispersal
AB (27) The study was designed to provide estimates of the costs of disruptions (delays, diversions, and cancellations) of aircraft arrivals (landings) associated with a number of Category II and III weather situations, with the emphasis on fog situations, at some of the major air carrier airports in the United States. As such they would be measures of the potential economic benefits the airport users would realize if the adverse effects of these weather situations on aircraft landings were completely eliminated by weather modification and/or electronic and

other approach and landing aids. This part of the report consists of the introduction to the report and a narrative description of the estimating procedure, together with some of supporting statistical material developed in connection with the estimating process. (Author)

AN (1) AD- 735 214/XAG

FG (2) 040200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Potential Economic Benefits of Fog Dispersal in the Terminal Area. Part II. Findings.

DN (9) Final rept.

RD (11) Nov 1971

PG (12) 358 Pages

RS (14) FAA-RD-71-44-2

PJ (16) FAA-RD-260-001-01R

RC (20) Unclassified report

NO (21) See also Part 1, AD-735 132.

DE (23) (*fog, scattering), (*air traffic control terminal areas, fog) economics, costs, landing aids, approach indicators, statistical analysis, aviation safety, aircraft landings, bibliographies, tables

ID (25) *fog dispersal

AB (27) The study was designed to provide estimates of the costs of disruptions (delays, diversions, and cancellations) of aircraft arrivals (landings) associated with a number of Category II and III weather situations, with the emphasis on fog situations, at some of the major air carrier airports in the United States. As such they would be measures of the potential economic benefits the airport users would realize if the adverse effects of these weather situations on aircraft landings were completely eliminated by weather modification and/or electronic and other approach and landing aids. Specifically, the estimates which were developed and are shown in this part of the report are of the costs of disruptions (delays, diversions, and cancellations) of scheduled arrivals (landings) of aircraft of first and second level United States certificated route air carriers in domestic and international passenger service. This part of the report also includes a narrative discussion of the qualifications and limitations of the estimates, conclusions, and a bibliography. (Author)

AN (1) AD- 735 970/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) Air Traffic Patterns for IFR and VFR Aviation, Calendar Year 1970.

RD (11) Nov 1971

PG (12) 155 Pages

RC (20) Unclassified report

DE (23) (*air traffic control systems, statistical data)

civil aviation, military transportation, transport aircraft, flight paths, periodic variations, terminal flight facilities

ID (25) *flight plans, ifr(instrument flight rules), instrument flight rules, vfr(visual flight rules), visual flight rules

AB (27) The report presents a detailed record of flight plans filed at flight service stations and combined station/towers as collected in a 2-percent random sample of all Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) flight plans filed in the 50 states and the ARTC area of San Juan, Puerto Rico. These data furnished the various Offices and Services of the Federal Aviation Administration with Terminal and en route air traffic activity for use in planning and management of the air traffic control system. (Author)

AN (1) AD- 749 626/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION POLICY AND PLANS

TI (6) Documentation for Report No. FAA-RD-70-4 New York Air Traffic Capacity Study.

DN (9) Final rept.

AU (10) Dunlay, William J., Jr.

Faison, Walter E.

Meisner, Milton B.

RD (11) Oct 1971

PG (12) 25 Pages

RS (14) FAA-AV-71-7

RC (20) Unclassified report

DE (23) (*air traffic, *new york)

civil aviation, airports, runways, air traffic control systems, mathematical models, queueing theory, probability density functions, urban planning

AB (27) The report serves as documentation for Appendix D, Report No. FAA-RD-70-4 entitled Analytical Study of Air Traffic Capacity in the New York Metropolitan Area. Mathematical derivations and probabilistic

arguments are given for several of the methods of that Appendix considered in need of further explanation. Documentation is organized according to the page and column number of the original report for easy cross reference. (Author)

AN (1) AD- 766 032/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The Use of an Organization Ombudsman in the Federal Aviation Administration Western Region.

DN (9) Rept. for Apr-Oct 71

AU (10) Chambers,W. Bruce
Lampl,James L.

RD (11) Oct 1971

PG (12) 133 Pages

RC (20) Unclassified report

DE (23) (*personnel management, *personnel), (*government employees, problem solving)
organizations, management engineering, public relations, social communication, civil aviation, reviews, predictions

ID (25) recommendations

AB (27) The traditional function of the Ombudsman apparently is to function as an arm of the legislature or the executive branch of government, receiving complaints and grievances from the citizenry and responding to help those who have legitimate problems. The ombudsman takes steps to improve administration so that like situations will not arise in the future. The concept has been applied to the FAA as described in this report. The organizational ombudsman, rather than serving the public or citizenry, deals only with the agency's own employees.

AN (1) AD-A009 658/XAG

FG (2) 010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY AND PLANS

TI (6) A Stochastic Model of Controlled Airway Traffic.

DN (9) Final rept.

AU (10) Dunlay,William J., Jr

RD (11) Oct 1971

PG (12) 55 Pages

RS (14) FAA-AV-71-6

RC (20) Unclassified report

DE (23) *Air traffic control systems, *Flight paths, *Civil aviation Networks, Mathematical models, Stochastic processes, Probability, Conflict, Capacity(Quantity), Mathematical prediction, Air traffic, Classification

ID (25) DOT/4IZ/ID

AB (27) The model presented in this paper may be used to estimate the expected number of overtake, crossing and merging conflicts at one flight level of an airway network. In addition, procedures are described for estimating the workload and saturation capacities of the network. A number of simplifying assumptions facilitate the analysis. Among these are (1) poisson arrival processes at all points, (2) constant aircraft velocities, and (3) aircraft paths that are coincident with charted airways, or otherwise predictable straight line segments. Each conflict model is essentially a conditional probability model given a particular pair of aircraft types which is then summed up over all possible aircraft-type pairs to obtain the unconditional conflict probabilities. A discussion of possible extensions of the model is included at the end of the report.

AN (1) AD- 730 979/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA AERONAUTICAL CENTER

TI (6) Aircraft Accidents Investigation and Prevention: Selected References.

RD (11) Sep 1971

PG (12) 186 Pages

RS (14) FAA Bibliographic List-4

RC (20) Unclassified report

DE (23) (*aviation accidents, *bibliographies)
civil aviation, aviation safety, reports, commercial planes, aircraft fires

ID (25) *accident investigations, *accident prevention

AB (27) The listing of references was compiled at the request of the Transportation Safety Institute, Aeronautical Center. It up-dates the Library's Bibliographic List No. 1 of aircraft accident references dated January, 1964. Indexes and bibliographic lists through 1970 were checked and considerable material prior to 1963 which did not appear in the earlier list has been included, but comprehensive coverage is not claimed. (Author)

AN (1) AD- 731 849/XAG

FG (2) 010600
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Senior Aviation Medical Examiners Conducting FAA First-Class Medical Examinations

AU (10) Norwood,Gordon K.

RD (11) Sep 1971

PG (12) 7 Pages

RS (14) FAA-AM-71-38

RC (20) Unclassified report

DE (23) (*flight surgeons, civil aviation), (*pilots, medical examination) reviews, statistical analysis

AB (27) Airline medical departments have provided a system of preventive health maintenance for their crews that has economically effected rehabilitation of experienced crewmembers who otherwise would have lost their medical licenses and thereby their livelihood. In recognition of this fact, the FAA has proposed to designate full-time or consultant physicians of certain air carriers in order that they might examine and certify their own crewmembers. The impact of this proposal on the presently designated senior aviation medical examiners is considered. Computer data relating to the activity of these designees indicate that relatively few would be significantly involved. Those not serving as consultants to an airline would still be examining over 50 percent of the first-class certificate holders. (Author)

AN (1) AD- 738 360/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

ECONOMICS

TI (6) Aviation Forecasts. Fiscal Years 1972-1983.

RD (11) Sep 1971

PG (12) 51 Pages

RC (20) Unclassified report

NO (21) See also AD-721 534.

DE (23) (*civil aviation, predictions)

fuel consumption, aviation fuels, pilots, airports, aircraft engines, air traffic control systems

ID (25) forecasting, general aviation aircraft

AB (27) ;Contents: Highlights of Fiscal Year 1971; Aviation industry Forecasts (Air carrier traffic, Air carrier fleet, General aviation flying and

aircraft fleet, Domestic aviation fuel consumption, Civil aircraft and engine production); FAA air traffic activity forecasts (Aircraft operations at airports with FAA traffic control service, FAA en route traffic control activity, FAA flight services); Airmen forecasts (Number of active pilots).

AN (1) AD- 739 130/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIR TRAFFIC SERVICE

TI (6) Simulation of Terminal Control Corridor (Boston, Massachusetts).

DN (9) Final rept. Nov 70-Sep 71

AU (10) Enright,Daniel J.

Price,Edwin H.

RD (11) Sep 1971

PG (12) 56 Pages

RS (14) FAA-AT-71-1

RC (20) Unclassified report

DE (23) (*civil aviation, *air traffic control systems), (*air traffic control terminal areas, massachusetts) models(simulations), feasibility studies, effectiveness, configuration

ID (25) boston(massachusetts)

AB (27) The purpose of the project was to demonstrate to the aviation industry the effectiveness and feasibility of the terminal control corridor concept in comparison with actual traffic, the terminal control area concept and modifications to the industry developed control corridor concept. (Author)

AN (1) AD- 745 641/XAG

FG (2) 120400

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY AND PLANS

TI (6) An Application of Dynamic Programming to Capital Investment Decision Analysis.

DN (9) Final rept.

AU (10) Couluris,George J.

RD (11) Sep 1971

PG (12) 110 Pages

RS (14) FAA-AV-71-5

RC (20) Unclassified report

DE (23) (*dynamic programming, *decision theory), (*air traffic control systems, instrument landings)
money, costs, mathematical models, computer programs, probability, management planning and control

ID (25) *benefit cost analysis, sensitivity analysis, *instrument landing systems, *investments

AB (27) The report describes a method of evaluating capital investment decisions that use the dynamic programming concept. Dynamic programming is an operations research technique that is effective in solving multistage decision problems. The dynamic programming process reduces many elaborate problems into a form that may be readily solved (provided the original problem is not excessively complicated). The particular problems discussed in the report concern the identification of an optimum capital investment decision. Typically, the problem involves the selection of a capital investment decision from a group of competing or alternative investment decisions. The method proposed in the report determines the discounted (present worth) value of the costs associated with each capital investment decision. (Author)

AN (1) AD- 913 487/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Report of the Advanced Electronic Flight Systems Symposium/Workshop, 23 August - 3 September 1971

AU (10) Morris, E. W.

RD (11) Sep 1971

PG (12) 110 Pages

RS (14) FAA-FS-130-2

RC (20) Unclassified report

AL (22) Distribution limited to U.S. Gov't. agencies only. Other requests for this document must be referred to Administrator, Federal Aviation Administration, Washington, D. C. 20591.

DE (23) (*navigation, symposia), (*flight control systems, symposia), (*aviation safety, symposia)
man machine systems, pilots, interfaces, aircraft equipment, real time, automatic pilots, electronic equipment, position finding, flight instruments, standardization, reliability

ID (25) collision avoidance

DL (33) 13

AN (1) AD- 731 722/XAG

FG (2) 010600

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SYSTEMS

ENGINEERING MANAGEMENT

TI (6) Technical Program Plan for Headquarters Air Traffic Service Automation.

DN (9) Final rept.

RD (11) Aug 1971

PG (12) 116 Pages

RS (14) FAA-EM-71-2

RC (20) Unclassified report

DE (23) (*air traffic control systems, automation), (*civil aviation, air traffic control systems)

data processing systems, costs, computers, time sharing, training

AB (27) A technical program plan to automate certain Headquarters Air Traffic Service functions was developed. The plan recommended a method of automating operational functions concerned with the nationwide monitoring of the air traffic control system and the control of air traffic flows. Functional descriptions, data processing design and size estimates for a representative system, estimated development and operating costs, and a recommended development and implementation plan are contained in the document. (Author)

AN (1) AD- 737 140/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) FAA Air Traffic Activity, Fiscal Year 1971.

RD (11) Aug 1971

PG (12) 279 Pages

RC (20) Unclassified report

NO (21) See also Rept. for Fiscal Year 1969, N70-32361.

AL (22) Availability: Paper copy available from GPO \$2.00 as stock no. 5007-0169.

DE (23) (*air traffic, statistical data), (*civil aviation, air traffic)
scheduling, commercial planes, transport aircraft, flight

AB (27) The fiscal year 1971 issue of 'FAA Air Traffic Activity' contains tables and charts which show activity at the FAA-operated facilities. These data reflect the trends and patterns in aviation in the United States and U.S. areas. (Author)

24

AN (1) AD- 728 318/XAG
FG (2) 061000
220100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) Civil Aeromedical Standards for General-Use Aerospace Transportation Vehicles. The Space-Shuttle Follow-on
AU (10) Mohler, Stanley R.
Gerathewohl, Siegfried J.
RD (11) Jul 1971
PG (12) 8 Pages
RS (14) FAA-AM-71-33
RC (20) Unclassified report
DE (23) (*space medicine, standards), (*scientific personnel, selection), (*manned spacecraft, scientific personnel)
space flight, accidents, safety, human engineering, oxygen, nitrogen, carbon dioxide, carbon monoxide, humidity, noise, radiation hazards, life support, acceleration, protection
AB (27) Second-generation general-use aerospace transportation vehicles will evolve, and aerospace medical specialists must provide timely medical criteria for (a) occupant selection, (b) vehicle design features, and (c) operational guidelines. Incorporation of this aeromedical data will result in (a) enhanced mission success and mission efficiency, and (b) minimized opportunity for mission failure, accidents, and long-range adverse consequences due to human factors deficiencies. The data include medical standards for oxygen, nitrogen, carbon dioxide and monoxide, humidity, heat, water vapor, internal noise, radiation, and other items. (Author)

AN (1) AD- 728 641/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) Field Evaluation of a Modular, Non-Tracking ATC System (ARTS II).
DN (9) Rept. for Dec 69-Nov 70
AU (10) Dziuk, James C.
RD (11) Jul 1971
PG (12) 105 Pages
RS (14) FAA-RD-71-51
PJ (16) FAA-151-515
RC (20) Unclassified report

DE (23) (*air traffic control systems, automation)
radar beacons, data processing systems, display systems, acceptability
AB (27) A programmable, beacon non-tracking terminal automation system was installed in a live terminal air traffic control environment to evaluate its operational suitability and controller acceptance. The system was evaluated through the collection of subjective and objective data over a period of five months. The subjective data was obtained through controller questionnaires and the objective data through measurement of controller workload. Baseline objective data were collected prior to the installation of the system. (Author)

AN (1) AD- 733 268/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) National Plan for Development of the Microwave Landing System.
RD (11) Jul 1971
PG (12) 107 Pages
RC (20) Unclassified report
NO (21) Prepared in cooperation with Department of Defense, Washington, D. C. and National Aeronautics and Space Administration, Washington, D. C.
DE (23) (*air traffic control systems, microwave frequency), (*landing aids, advanced planning)
management planning, terminal guidance
ID (25) *microwave landing systems
AB (27) A plan for the development of a new civil/military microwave landing system (MLS) is presented. It delineates the five (5) year program of integrated activity deemed necessary to provide a MLS that meets the wide range of user operational requirements set down by RTCA SC-117. Included in the plan are two interdependent and complementary activities: (1) an industry oriented systems development program designed to produce prototype equipments for flight test and evaluation and, finally, production specifications at the earliest possible date; and (2) a concurrent series of supporting government programs, to be undertaken by DOT/DOD/NASA, which will include validation efforts independent of the industry program, investigations of sub-system concepts and techniques, performance of flight tests and system evaluation efforts, and application of the microwave guidance system to the requirements of the individual users. Special emphasis is placed on the need for expeditious development of a MLS basic design that will utilize a standard signal structure and feature highly flexible modular building-block concepts that will facilitate its being appropriately configured to meet the complex requirements for full scale all weather automatic landings on the one hand, and the lesser requirements of

general aviation users on the other. (Author)

AN (1) AD- 734 230/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

ECONOMICS

TI (6) Large and Medium Hub; Aviation Activity Forecast, 1966-1982.

RD (11) Jul 1971

PG (12) 43 Pages

RC (20) Unclassified report

DE (23) (*aeronautics, predictions)

civil aviation, transport planes, air traffic, statistical data, airports, management planning

AB (27) The forecasts of the large and medium hubs are summarized on two bases

The first is an alphabetical listing of large hubs followed by a similar listing for the medium hubs. Each of the five forecast series is shown separately. In addition, summaries and brief analyses of the rationale used to develop individual air carrier forecasts have been made for each FAA region showing the sum of large and medium hub activity by data series. Annual growth rates are shown along with each regions share of the national large and medium hub passenger enplanements and air carrier operations. Each regions projected share of national population and personal income is also shown based on data published by the National Planning Association. (Author)

AN (1) AD- 726 971/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT

SYSTEMS

TI (6) Military Air Traffic Activity Report, Calendar Year 1970.

DN (9) Annual rept. 1 Jan-31 Dec 70

AU (10) Cayce, Betty V.

RD (11) 30 Jun 1971

PG (12) 51 Pages

RC (20) Unclassified report

DE (23) (*air traffic, reports), (*military operations, air traffic)

statistical data, landing fields, air force, army aircraft, naval aircraft, civil aviation, radar landing control, aircraft landings

AB (27) The report summarizes Calendar year 1970 air traffic activity reported by U.S. Air Force Bases, Army Airfields, and Naval Aeronautical

Facilities in the United States and overseas. (Author)

AN (1) AD- 731 698/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

POLICY AND PLANS

TI (6) A Policy Paper Guidelines for National Aviation System Planning and R and D Policy.

DN (9) Final rept.

AU (10) Darden, Benjamin F. L.

Meisner, Milton B.

Messier, Thomas P.

RD (11) Jun 1971

PG (12) 116 Pages

RS (14) FAA-AV-71-2

RC (20) Unclassified report

DE (23) (*civil aviation, *management planning), (*systems engineering, civil aviation)

scientific research, budgets, ecology, population, decision making, industrial research, economics, standards

AB (27) In most long-range aviation asytem planning, a singleness of purpose is missing. The proposed goals approach method of aviation system planning gives clear direction for system development. Aviation system goals should relate to broad societal needs as well as internal system requirements. Levels of research and development strongly affect rate of goal achievement. Industry and government program information indicates FAA research expenditures are appropriate at an annual expenditure rate of \$100-200 million. (Author)

AN (1) AD- 732 568/XAG

FG (2) 010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT

SYSTEMS

TI (6) 1970 U. S. Civil Airmen Statistics.

RD (11) Jun 1971

PG (12) 41 Pages

RC (20) Unclassified report

DE (23) (*flight crews, statistical data), (*civil aviation, flight crews)

pilots, commercial planes, transport planes, personnel management,

tables

ID (25) *nonpilot certificates, *airman certificates, *pilot certificates
AB (27) Statistic pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records. Data are provided concerning active pilot certificates held, active nonpilot certificates held, and airman certificates issued.

AN (1) AD- 737 040/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Annual Report of Operations Under the Airport and Airway Development Act (2nd).

RD (11) 30 Jun 1971

PG (12) 45 Pages

RC (20) Unclassified report

NO (21) See also report dated 30 Jun 70, AD-718 126.

DE (23) (*airports, management planning and control)
federal budgets, engineering, safety, standards, civil aviation

AB (27) The Airports Program is based primarily on the provisions of the Airport and Airway Development Act of 1970 (Public Law 91-258) enacted on 21 May 1970. Principal activities of this program include preparation of a National Airport System Plan, administering programs of grants-in-aid for airport planning and airport development; development and application of airport planning, engineering and safety standards; airport certification and inspection for safety of operations; field collection of information for the airport data program; participation in transfer of Federal land and property for civil airport use; and the program for assuring compliance and enforcement of airport agreements. (Author)

AN (1) AD- 725 811/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Evaluation of IFR Departure Procedure, Albuquerque, N. M. (Sunport) Runway 08.

DN (9) Final rept.

AU (10) Heidger, Norman C.
Richards, Harold R.

Parr, Frank

RD (11) May 1971

PG (12) 31 Pages

RS (14) FAA-FS-600-2

RC (20) Unclassified report

DE (23) (*takeoff, *instrument flight), (*airports, air traffic control systems)
terminal flight facilities, distance measuring equipment, flight simulators, flight instruments, navigational aids, flight paths, feasibility studies, new mexico, air traffic

ID (25) ifr (instrument flight rules), instrument flight rules

AB (27) A flight simulator study was made of an IFR departure procedure from Runway 08 at Albuquerque, N. M. Sunport IRPORT5 Hot day temperature and calm surface winds were used for initial tests. Then 'normal' values were used to simulate actual ABQ conditions for easterly wind flows. 64 departures were made by 5 qualified pilots in the Boeing 720 flight simulator. A statistical analysis was made of recorded flight tracks to determine the average maximum distances and to calculate the 95 and 99 percent confidence limits of these averages. Left and right turns were flown, with specified turning heights of 400 and 700 feet above ground level. (Author)

AN (1) AD- 728 733/XAG

FG (2) 010309

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Supersonic Transport Airworthiness Standards. F-102 Flight Research Program.

DN (9) Technical rept.

AU (10) Abrams, Richard
LeSuer, Robert F.
Benefield, Tommie D.

RD (11) May 1971

PG (12) 103 Pages

RS (14) FAA-FS-71-2

PJ (16) FAA-570-006-11H

RC (20) Unclassified report

DE (23) (*supersonic planes, *standards), (*jet transport planes, take-off), (*commercial planes, supersonic planes)
performance (engineering), jet fighters, flight testing, drag, climbing, delta wings

ID (25) f-102 aircraft, f-102a aircraft, *supersonic transports

AB (27) A flight research program was conducted by the FAA to provide information for the development of takeoff airworthiness standards for supersonic transport aircraft. A General Dynamics/Convair F-102A

aircraft was utilized for the tests. The combined test results from this program and those obtained from ground based simulation studies that were being conducted concurrently at the NASA Ames Research Center were used as a basis for proposing revisions to the Federal Aviation Regulations (Part 25-Airworthiness Standards: Transport Category Airplanes). Proposed changes to applicable standards use zero rate of climb speed to establish the baseline upon which factored performance levels can be established. The effects of induced drag on climb performance are also considered in these proposed revisions. (Author)

AN (1) AD- 723 579/XAG

FG (2) 010600

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Aircraft Noise Standards and Regulations.

DN (9) Speech rept. Mar-Apr 71

AU (10) Power, Joseph K.

RD (11) Apr 1971

PG (12) 74 Pages

RS (14) FAA-RD-71-24

RC (20) Unclassified report

DE (23) (*jet plane noise, *standards), (*united states government, civil aviation)

jet engine noise, sonic boom, takeoff, aircraft landings, airports, tolerances(physiology)

AB (27) The paper discusses Public Law 90-411 and FAR Part 36 of Federal Regulations. Noise exposure forecasts and various systems for rating aircraft noise world-wide are presented. Noise certification and aircraft retrofit regulations are discussed as well as aircraft operational procedures to reduce noise. (Author)

AN (1) AD- 724 562/XAG

FG (2) 010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA NATIONAL FLIGHT

INSPECTION DIV

TI (6) Evaluation of Ascent Descent Director (ADD) and Vertical Path Computer (VPC).

DN (9) Final rept.

AU (10) Richards, H. R., Jr.

Baird, John H.

Parr, Frank

RD (11) Apr 1971

PG (12) 67 Pages

RS (14) FAA-FS-NFID-SDB-71-1

RN (18) FAA-FS-600-1

RC (20) Unclassified report

DE (23) (*navigational aids, performance(engineering)), (*air traffic control systems, civil aviation)

navigation computers, glide path systems, landing aids, errors, flight testing, distance measuring equipment, statistical data

ID (25) evaluation

AB (27) Two RNAV vertical computers were evaluated to determine whether the RNAV computer errors exceeded the 100 foot vertical and 3000 foot horizontal error (2 sigma) allowance suggested by the RTCA SC-116E study group. The evaluation procedure attempted to isolate the vertical from the horizontal errors, but could not do so. Therefore, the horizontal along-track error contributed to the vertical error effect. The vertical 'resultant' error of the Ascent-Descent Director (ADD) and the Vertical Path Computer (VPC) were both within the error envelope allowed the 3D-RNAV computer. (Author)

AN (1) AD- 724 586/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) An Operational Evaluation of the Two-Segment Approach for Noise Abatement.

DN (9) Final rept.

AU (10) Chubb, Robert A.

RD (11) Apr 1971

PG (12) 21 Pages

RS (14) FAA-RD-71-21

RC (20) Unclassified report

DE (23) (*instrument landings, *aircraft noise), (*approach, aircraft noise) glide path systems, guidance, computers, jet transport planes, commercial planes

ID (25) *noise reduction, dc-9 aircraft, evaluation

AB (27) The report presents the results of an operational evaluation of the two-segment instrument landing approach for noise abatement purposes. The evaluation was performed using a FAA DC-9 modified with a Selective

Glide Slope (SEGS) computer which provided the vertical guidance for the upper segment. The results indicate general acceptability of the two segment procedure for VFR operations and suitability for IFR evaluation. The SEGS computer as installed in the DC-9 was unsuitable for IFR operations; autopilot operation, transition and improved upper segment termination warnings are required. (Author)

AN (1) AD-A012 974/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Measurement of Runway Friction Characteristics on Wet, Icy or Snow Covered Runways.

DN (9) Progress rept.

RD (11) 01 Apr 1971

PG (12) 26 Pages

RS (14) FAA-FS-160-65-68-1

RC (20) Unclassified report

NO (21) Previously announced as N71-26803. Sponsored in part by National Aeronautics and Space Administration, Washington, D.C.

DE (23) *Pavements, *Runways, *Friction, *Skidding
Military facilities, State of the art, Test methods, Surfaces,
Moisture, Snow, Ice, Test equipment, Acceptability

ID (25) DOT/4CZ/CA, DOT/4GC/GA

AB (27) Three methods of measuring runway friction characteristics are described and possible usage of the data obtained is indicated. The information presented reflects the current state-of-the-art for measurement and classification of the relative slipperiness of runway surfaces. The three methods described include: (1) The diagonal-braked vehicle test method for measuring stopping distances on paved surfaces, (2) the Mu Meter method for evaluating runway surface characteristics, and (3) the James Brake Decelerometer method for determining runway slipperiness in the form of a friction coefficient.

AN (1) AD- 722 203/XAG

**FG (2) 010300
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) SRDS Program, Goals, Achievements, Trends.

DN (9) Rept. for 1 Apr 70-31 Mar 71.

RD (11) 31 Mar 1971

PG (12) 162 Pages

RC (20) Unclassified report

DE (23) (*air traffic control systems, scientific research), (*communication systems, aircraft), (*navigation, aircraft)
frequency, systems engineering

ID (25) systems analysis

AB (27) The material in the report is presented in separate chapters for each of the SRDS Technical development divisions: Air Traffic Control, Communications, Navigation, Frequency Management, Systems Analysis and Aircraft. An index lists the SRDS subprograms in sequential numeric order along with key descriptive words on each effort. (Author)

AN (1) AD- 723 726/XAG

**FG (2) 010500
040200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) Influence of Terrain on Design and Costs of Ground-Based Fog Dispersal Systems at U. S. Airports.

DN (9) Final rept.

AU (10) Marut, John K.

RD (11) Mar 1971

PG (12) 73 Pages

RS (14) FAA-RD-71-16

RC (20) Unclassified report

DE (23) (*fog, removal), (*landing fields, fog)
airports, runways, terrain, systems engineering, cost effectiveness

ID (25) benefit cost analysis, *fog dispersal

AB (27) The influence of terrain factors on construction and operational costs of fog dispersal systems being developed for use at U.S. airports must be considered in the economic cost-benefit analysis of the system. An examination of 52 Category II designated runways at U.S. airports reveals that a majority of these airports have terrain characteristics which will affect the overall system cost. Water bodies and swamps in runway approach areas will have the biggest impact in terms of initial construction costs because of additional foundation requirements. Hilly terrain in approach areas may affect operational cost or construction costs of the system. Additional design considerations may be required for fog dispersal systems to be constructed in residential or industrial areas located in approach zones. (Author)

AN (1) AD- 724 961/XAG
FG (2) 230200
010200
131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF AVIATION

MEDICINE

TI (6) Physician Pilot-In-Command Fatal Flight Accidents 1964 through 1970

AU (10) Cierebiej, Albert

Mohler, Stanley R.

Stedman, V. Geniese

RD (11) Mar 1971

PG (12) 10 Pages

RS (14) FAA-AM-71-9

RC (20) Unclassified report

DE (23) *AVIATION PERSONNEL, *AVIATION ACCIDENTS

MEDICAL PERSONNEL, STATISTICAL ANALYSIS, MORTALITY RATE

AB (27) It was reported in 1966 that the prevalence of fatal aircraft accidents among physician pilots during 1964 and 1965 was four times that of general aviation pilots. There was a marked drop in the total number of fatal accidents among physician pilots during the years 1966, 1967, 1968 but an increase in 1969 and further increase in 1970. Among all general aviation pilots, there has been a steady decline in fatal accidents since 1968. (Author)

AN (1) AD- 726 286/XAG

FG (2) 010600

061000

230200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) Medical and Psychological Aspects of Mass Air Transportation

AU (10) Gerathewohl, S. J.

Mohler, S. R.

Siegel, P. V.

RD (11) Mar 1971

PG (12) 32 Pages

RS (14) FAA-AM-71-70

RC (20) Unclassified report

DE (23) (*air transportation, *aviation medicine), (*human factors engineering, air transportation)

aviation safety, civil aviation, jet transport planes, airports, medical supplies

ID (25) *mass transportation

AB (27) The increase in air transportation depends not only on the technological progress and the availability of more and larger aircraft, but also on the corresponding increase in flight safety. Since, in most of the aircraft accidents, pilot error is a contributing factor, research concerning the medical and human factors must be expanded to include the new generation aircraft, in particular, to the jumbo jets and air buses which are the means of mass air transportation. Moreover, the medical aspects of airports must be adjusted to serve the increasing number of crews, passengers and patients. Means must be provided for first aid, quarantine and the prevention of infectious diseases through air transportation; and a disaster plan must be established for all major airports. Finally, the effects of mass air transportation on the environment must be considered in order to protect the quality of life. (Author)

AN (1) AD- 732 117/XAG

FG (2) 040100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) FAA Symposium on Turbulence, 22-24 March 1971, Washington, D. C.

DN (9) Final rept.

RD (11) 24 Mar 1971

PG (12) 117 Pages

RC (20) Unclassified report

DE (23) (*atmospheric motion, symposia), (*clear air turbulence, detection) wake, wind, shear stresses, thunderstorms, aviation safety, vortices, weather forecasting, interactions, flight tests, infrared detectors, doppler radar, sensors, radar equipment, air traffic control systems, reviews, landing fields

AB (27) The symposium, the first of its kind, covered wake turbulence, clear air turbulence, wind shear, upsets, thunderstorms, and turbulence plotting. Presentations were given by renowned experts from the academic community, airlines, and Government organizations, ranging from reports of test on aircraft wake turbulence to scientific studies of the turbulence in the atmosphere and then to ways of transmitting turbulence information to pilots in a timely manner. The final report of the Symposium includes a highlight summary of each presentation. Attendees numbered more than 800, including representatives from 15 foreign countries. (Author)

AN (1) AD- 755 885/XAG

FG (2) 010600
050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The National Aviation System Policy Summary, 1971.

RD (11) Mar 1971

PG (12) 232 Pages

RC (20) Unclassified report

AL (22) Availability: Paper copy available from GPO \$2.25 as stock no. 5007-0175 and TD4.33/2:972.

DE (23) (*civil aviation, *management planning and control) airports, air traffic control systems, automation, instrument flight, data transmission systems, communication and radio systems, air traffic control terminal areas, aviation personnel, aviation safety, landing aids, air traffic, data processing, meteorological radar, rescues, navigational aids, military operations

ID (25) air route traffic control centers, air space allocation, flight service stations, enroute traffic control systems

AB (27) ;Contents: The shape of the next ten years; Terminal area control and services; En route control and services; Flight services; Airspace allocation and rules; En route navigation; Landing aids; System support; Airports; Manpower and training; Environment.
21

AN (1) AD- 756 580/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) The National Aviation System Plan - 1972-1981.

RD (11) Mar 1971

PG (12) 205 Pages

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *MANAGEMENT PLANNING AND CONTROL
AIR TRAFFIC CONTROL SYSTEMS, NAVIGATION, MANPOWER, AUTOMATION,
RADAR
EQUIPMENT, RUNWAYS

AB (27) National Aviation System expansion has noticeably failed to keep pace during recent years with aircraft development and with the tremendous increases in air transportation demand. Continued growth is forecast, with flight activity in 1981 projected to double the 1970 activity. The National Aviation System Plan provides for the orderly acquisition of new facilities and equipment at a rate sufficient to catch up the existing backlog as well as to satisfy future needs. Provision has been made for incorporating products of the development process into the

system plan.

AN (1) AD- 724 589/XAG

FG (2) 010100

010305

010600

200400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) Vortex Wake Turbulence. Flight Tests Conducted During 1970.

DN (9) Final rept.

RD (11) Feb 1971

PG (12) 66 Pages

RS (14) FAA-FS-71-1

RC (20) Unclassified report

DE (23) (*trailing edge, vortices), (*jet transport planes, trailing edge), (*flight paths, jet transport planes), (*civil aviation, aviation safety) sweptback wings, interactions, wake, air traffic control systems, turbulence, flight testing, flow visualization

ID (25) *wing tip vortices

AB (27) The report covers flight tests conducted by the FAA, NASA, and the Boeing Company during 1970 to determine the characteristics intensities, and persistence of trailing wing tip vortices generated by typical transport aircraft and to investigate their effect on other aircraft encountering the vortices. Test methods involved in-flight penetration of vortices by instrumented aircraft and fly bys of instrumented towers equipped for (smoke) vortex visualization. Resulting data depicts vortex vertical and lateral movements, vortex dimensions, and tangential velocities. Data also includes induced roll rates and 'g' forces experienced by encountering aircraft. Vortex characteristics and related vortex avoidance recommendations are summarized.

AN (1) AD- 721 534/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
ECONOMICS

TI (6) Aviation Forecasts. Fiscal Years 1971-1982.

RD (11) Jan 1971

PG (12) 53 Pages

RC (20) Unclassified report
DE (23) (*aeronautics, predictions)
civil aviation, fuel consumption, aviation fuels, aircraft engines,
airports, air traffic control systems, pilots, manpower
ID (25) forecasting, general aviation aircraft
AB (27) ;Contents: Highlights of fiscal year 1970; Aviation industry forecasts
(Air carrier traffic, Air carrier fleet, General aviation flying and
aircraft fleet, Domestic aviation fuel consumption, Civil aircraft and
engine production); FAA air traffic activity forecasts (Aircraft
operations at airports with FAA traffic control service, FAA en route
traffic control activity, FAA flight services); Airmen forecasts
(Number of active pilots).

AN (1) AD- 728 728/XAG

FG (2) 010200

061000

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL
AEROMEDICAL
INST

TI (6) General Aviation Structures Directly Responsible for Trauma in Crash
Decelerations.

DN (9) Special rept.

AU (10) Swearingen, John J.

RD (11) Jan 1971

PG (12) 215 Pages

RN (18) FAA-AM-71-3

RC (20) Unclassified report

AL (22) Availability: Microfiche copies only.

DE (23) *AVIATION ACCIDENTS, *CRASH INJURIES

WOUNDS AND INJURIES, AIRCRAFT, SAFETY, IMPACT SHOCK

ID (25) restraint systems

AB (27) An analytical study of general aviation accident injuries is presented.

Needs for improvement of both the crash design of the interior of the
cockpit and the structural integrity of the cockpit itself are clearly
illustrated. Crash safety design in light aircraft has fallen so far
behind that for the automobile that death rates per 100,000,000
passenger miles in light aircraft are at least seven times those for
automotive transportation. The author concludes, after many detailed
analyses in this study that many present-day general aviation aircraft
with their rigid instrument panels studded with heavy instruments,
protruding knobs and sharp edges, along with a lack of slow-return
padding and very inadequate restraint equipment, are producing fatal or
very serious injuries during low cabin crash decelerations with some as

low as 3-4 'g'. Again based on the author's calculations, it is not
uncommon for light aircraft cabins to start to disintegrate and/or
collapse on the occupants if the crash forces exceed 9 or 10 'g'. And
yet, some manufacturers have produced aircraft for aerial application
that have cockpits that can withstand up to 40 'g'. Engineering design
changes can sharply reduce the death and injury rate in general
aviation accidents. (Author)

23

AN (1) AD- 725 326/XAG

FG (2) 010600

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Congressional Air Transportation Congestion Study. Part 1.

RD (11) 1971

PG (12) 162 Pages

RC (20) Unclassified report

DE (23) *AIR TRAFFIC

SCHEDULING, STATISTICAL ANALYSIS, AVIATION SAFETY, AIR TRAFFIC
CONTROL

SYSTEMS, AIR TRAFFIC CONTROLLERS

AB (27) House of Representatives Report No. 91-1115 directed the Department of

Transportation, in close collaboration with the Civil Aeronautics
Board, to study the problem of aircraft traffic during prime travel
hours and the extent to which this concentration results from
unrealistic scheduling of flights by the airlines. The resultant
effects on safety and controller staffing were to be investigated. This
report presents the findings, conclusions, and recommendations of the
two agencies concerning the problem. (Author)

AN (1) AD- 730 179/XAG

FG (2) 010200

131200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT
STANDARDS SERVICE

TI (6) Aircraft Fire Detection: Report of Conference Held in Washington, D.
C., on 16-17 November 1970.

RD (11) 1971

PG (12) 210 Pages

RC (20) Unclassified report

DE (23) *AIRCRAFT FIRES, *FIRE ALARM SYSTEMS

SYMPOSIA, AIRBORNE, DETECTION, VERTICAL TAKEOFF AIRCRAFT, SMOKE,

HELICOPTERS, STATE OF THE ART, NAVAL AIRCRAFT, AIR FORCE OPERATIONS,
FIRE SAFETY

ID (25) state of the art reviews

AB (27) A symposium on aircraft fire detector systems was held to familiarize Federal Aviation Administration Regional personnel with the characteristics, capabilities, and limitations of the currently available detector systems. A number of presentations were made by representatives of leading fire detector, helicopter, and small airplane manufacturers, and by representatives of the military and the FAA National Aviation Facilities Experimental Center. All aspects of aircraft fire detection were reviewed. (Author)

AN (1) AD- 722 032/XAG

FG (2) 061200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE

TI (6) A Device and Method for Rapid Indirect Measurement of Human Systolic and Diastolic Blood Pressures

AU (10) Lategola, Michael T.
Harrison, Hiley F.

RD (11) Dec 1970

PG (12) 25 Pages

RS (14) FAA-AM-70-21

RC (20) Unclassified report

DE (23) (*BLOOD PRESSURE, MEASUREMENT)
MONITORS, INSTRUMENTATION, PHYSIOLOGY

AB (27) An indirect blood pressure measuring device and method were evolved for human use. This system is capable of providing 30 measurements each of systolic and diastolic pressures per minute. The system utilizes two brachial blood pressure cuffs (one on each arm) and fully automatic cycling for each pressure measurement. The main advantages of this system are: (1) minimum circulatory impedance during each measurement; (2) the capability of measuring rapid blood pressure transients; and (3) the complete avoidance of all the inherent risks of intra-arterial catheterization. (Author)

AN (1) AD- 746 353/XAG

FG (2) 010309
010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) International Aviation Maintenance Symposium (6th Annual), December 8-10, 1970. The Aviation Maintenance Environment in the 70's. Held at Skirvin Hotel, Oklahoma City, Oklahoma, Imperial Ballroom

AU (10) Burke, J. P.

DiBella, J. P.

Sabel, J. B.

RD (11) Dec 1970

PG (12) 305 Pages

RC (20) Unclassified report

DE (23) (*maintenance, *symposia), (*commercial planes, maintenance) ground support equipment, instruction manuals, jet engines, maintainability, management planning and control, maintenance personnel, maintenance equipment, nondestructive testing, training aids, costs, automation

ID (25) computer aided analysis, design criteria, faults, isolation

AB (27) Papers presented at a commercial aircraft maintenance symposium are reported. Present and advanced techniques for aircraft/power plant maintenance are reviewed.

AN (1) AD- 715 247/XAG

FG (2) 050800
050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE

TI (6) Performance Ratings and Personality Factors in Radar Controllers

AU (10) Karson, Samuel

O'Dell, Jerry W.

RD (11) Sep 1970

PG (12) 7 Pages

RS (14) FAA-AM-70-14

RC (20) Unclassified report

NO (21) Presented at the 1969 Annual Meetings of the Aerospace Medical Association held in San Francisco, Calif.

DE (23) (*air traffic controllers, performance(human)), (*personality, analysis), (*radar operators, personality) effectiveness, questionnaires, factor analysis, correlation techniques, motivation, psychological tests

AB (27) The purpose of the study was to determine whether primary or second-order personality questionnaire factors were related to job performance ratings on the Employee Appraisal Record in a sample of 264 radar controllers. A Pearson correlation matrix was computed based on 19 variables which included EAR part II and part IV, a motivational

distortion score and the primary factors measured by the Sixteen Personality Factor Questionnaire. A principal axis factor analysis was completed with varimax rotation which yielded eight second-order factors which were identified as follows: I. Anxiety-versus-Dynamic Integration; II. Subduedness-versus-Independence; III. Criterion; IV. Cortertia-versus-Pathemia; V. Exvia-versus-Invia; VI. Intelligence; VII. Obsessive-Compulsive; VIII. Rebelliousness. While all of these second-order factors have been identified previously, the criterion variables were not related to any of the personality measures. (Author)

- AN (1) AD- 711 605/XAG
FG (2) 040200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) TURBOCLAIR FOG DISPERSAL METHOD: DEVELOPMENT AND TESTING OF UNDERGROUND BLOWER UNIT (1965-1969).
DN (9) Final technical rept. 1965-69
AU (10) Fabre,R.
Marut,John K.
RD (11) Aug 1970
PG (12) 79 Pages
RS (14) FAA-RD-70-36
RC (20) Unclassified report
NO (21) Trans. of unidentified French language report.
DE (23) (*fog, removal)
scattering, meteorological phenomena, test methods, airports, turbojet engines, temperature sensitive elements, france
ID (25) orly airport, cloud seeding, translations
AB (27) A testing program to evaluate the Turboclair fog dispersal method has been completed at Orly Airport, Paris, France. The program included evaluating underground turbojet engine design and performance, determining the optimum location and orientation of the underground unit relative to a runway, and obtaining data on the unit's functional contribution to fog dispersal. The Turboclair method involves using underground turbojet engines to heat air along runways in order to cause evaporation of water droplets in fog and thus increase visibility. The effectiveness of heat from the engines was evaluated at Orly Airport through air temperature measurements and visual observations. The results of the test program confirm that the Turboclair method is effective on warm fog when air volumes are heated by the engines to 2C above ambient temperature. The size of the defogged space is determined by engine orientation as dictated by wind

direction and intensity. From test results it is concluded that this type of installation is ready for implementation at an operational level at Orly Airport. (Author)

- AN (1) AD- 713 495/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) TABLES OF RUNWAY VISUAL RANGE VALUES AS A FUNCTION OF TRANSMITTANCE AND VARIOUS VALUES OF PILOT'S ILLUMINANCE THRESHOLD AND LIGHT TARGETS.
DN (9) Final rept.
AU (10) Larsson,Alcott J.
Marut,John K.
Northedge,Robert L.
RD (11) Aug 1970
PG (12) 62 Pages
RS (14) FAA-RD-70-58
PJ (16) FAA-450-402-20E
RC (20) Unclassified report
DE (23) (*runways, *visibility)
pilots, visual perception, atmospheres, light transmission, illumination, tables(data), statistical data, computer programs
ID (25) runway visual range, rvr(runway visual range)
AB (27) Values of Runway Visual Range (RVR) were developed for various atmospheric transmittances utilizing Allard's Law and Koschmieder's Law. Commonly employed constant's of pilot's contrast threshold and visual illuminance threshold are utilized in the appropriate RVR equations. Computations are based on a 250 foot baseline transmissometer with light target intensities of 10,000, 2,000 and 400 candela, values which are presently used in the United States. Information is presented in tabular form showing transmittances corresponding to runway visual range readings from 600 feet to 7000 feet in 50 foot increments. Each table includes data for each of the three light target intensities. A total of eight tables is provided. The computer program which was utilized to develop each set of data is included with each table. (Author)
- AN (1) AD- 713 055/XAG
FG (2) 010600

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) PHYSIOLOGICALLY TOLERABLE DECOMPRESSION PROFILES FOR SUPERSONIC

TRANSPORT TYPE CERTIFICATION

AU (10) Mohler, Stanley R.

RD (11) Jul 1970

PG (12) 17 Pages

RS (14) FAA-AM-70-12

RC (20) Unclassified report

DE (23) (*supersonic flight, decompression), (*decompression, tolerances(physiology)), (*civil aviation, supersonic flight) humans, standards, aviation safety, stress(physiology), aviation medicine

AB (27) The Supersonic Transport represents a quantum step in civil aeronautics. It will cruise at altitudes having low ambient gaseous pressures far exceeding human capacities for compensatory respiration. In consideration of this evolutionary step, tentative airworthiness standards with respect to SST pressurization capabilities in the event of depressurization emergencies are discussed and a series of evolved SST cabin altitude-time profiles, together with the basis of their development, are then presented. (Author)

AN (1) AD- 714 667/XAG

FG (2) 250300

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA AERONAUTICAL CENTER

TI (6) High Altitude Performance Assurance.

DN (9) Final rept.

AU (10) Brodnan, Stephen J.

RD (11) Jul 1970

PG (12) 105 Pages

RN (18) FAA-RD-70-30

RC (20) Unclassified report

DE (23) (*radio navigation, high altitude), (*communication and radio systems, high altitude) supersonic aircraft, flight testing, performance(engineering)

ID (25) supersonic transport planes

AB (27) With an Air Force RB-57F aircraft outfitted with a data collection system, tests were conducted at an altitude of 60,000' to determine performances of air navigation and communication facilities at the

higher altitudes to be used by SST. Additional tests were conducted at 40,000' with both the RB-57F and the KC-135 aircraft operated by the National Flight Inspection Division to determine correlation of existing data. Performances at 60,000' were generally found to conform to expected performances based on extrapolations and predictions of lower altitude measurements. The adequacy of the present navigation system for SST operations was not analyzed due to the lack of information concerning planned flight procedures. (Author)

AN (1) AD- 708 294/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) EVALUATION OF LOWER ILS MINIMUMS FOR LIGHT AIRCRAFT

AU (10) Skinner, Raymond W.

Parr, Frank

RD (11) Jun 1970

PG (12) 55 Pages

PJ (16) FAA-FS-460-5

RC (20) Unclassified report

DE (23) (*civil aviation, instrument landings), (*instrument landings, reliability)

low altitude, aviation safety, flight testing

ID (25) aircraft, lightweight

AB (27) 120 ILS approaches were flown under simulated IFR (hooded) conditions by 17 pilots in 6 types of light twin aircraft to test the ability of pilots to align for landing or to execute a missed approach at minimums lower than 200 feet height and 1/2 mile visibility. A decision height of 100 feet was used during the entire project. Although only 80 percent of the scheduled landings were completed, pilots indicated that with normal runway lengths (5000 feet) most runs scheduled for landing could have been completed. The altimeter errors at the 100 foot decision height ranged from -80 to +45 feet, and seemed to cause the major problem. Missed approach data indicate that the missed approach obstacle clearance must be revised if minimums below 200 feet are to be approved for this pilot group. (Author)

AN (1) AD- 718 126/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Annual Report of Operations under the Federal Airport Act (25th).

RD (11) 30 Jun 1970

PG (12) 46 Pages
RC (20) Unclassified report
NO (21) See also rept. dated 30 Jun 69, AD-699 497.
DE (23) (*airports, management planning and control)
construction, federal budgets, design, safety, standards, human factors
engineering
ID (25) federal airport act
AB (27) Contents: Organization for carrying out the act; Impact of new
legislation; Airport planning; Airport development; Protection of the
public interest in airports; Airport design, construction, and safety
standards.
SE (34) 25

AN (1) AD- 707 186/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
ASSOCIATE**

ADMINISTRATOR ENGINEERING/DEVELOPMENT

**TI (6) R AND D PLAN TO INCREASE AIRPORT AND AIRWAY SYSTEM CAPACITY.
PROGRAM**

DESCRIPTION.

DN (9) Working paper.

RD (11) May 1970

PG (12) 64 Pages

RC (20) Unclassified report

DE (23) *AIR TRANSPORTATION, *AIRPORTS

MANAGEMENT PLANNING AND CONTROL, FLIGHT PATHS, PREDICTIONS,
SYSTEMS

ENGINEERING, RUNWAYS, AIR TRAFFIC CONTROL SYSTEMS

ID (25) research and development

AB (27) The purpose of the research and development activity described is to
achieve the national goal of providing an air transportation system for
all categories of aviation commensurate with projected growth of the
air transportation industry. The funding estimates included represent
current Federal Aviation Administration (FAA) technical judgments of
the FAA sponsored R and D effort required to meet the goal of
increasing airport and airway system capacity to levels forecasted for
the 1980 to 1995 period. (Author)

AN (1) AD- 711 059/XAG

FG (2) 010305

131200

210400

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE**

**TI (6) CONFERENCE ON FUEL SYSTEM FIRE SAFETY (2nd). REPORT OF
CONFERENCE HELD**

**AT FEDERAL AVIATION ADMINISTRATION, WASHINGTON, D. C. ON 6-7 MAY
1970.**

RD (11) 07 May 1970

PG (12) 157 Pages

RC (20) Unclassified report

DE (23) (*fuel systems, *fire safety), (*aviation fuels, fire safety)

aviation safety, aircraft fires, fuel tanks, ignition, expanded
plastics, jet transport planes, liquefied gases, catalysis, lightning,
symposia

AB (27) Contents: Advisory Committee reports; Statement by ATA at the FAA
conference on Fuel System Fire Safety; USAF experience with
polyurethane foam inerting material; USAF, C-141 and C-135 fuel tank
nitrogen inerting tests; Oxygen dilution requirements for inerting
aircraft fuel tanks; In-flight control of power plant fires with liquid
nitrogen; Fuel tank inerting using catalytic combustion techniques;
Lightning-induced voltages in electrical circuits associated with
aircraft fuel systems; FAA DC-9, liquid nitrogen fuel tank inerting
program.

AN (1) AD- 713 488/XAG

FG (2) 010309

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION**

MEDICINE

TI (6) ANTICOLLISION LIGHTS FOR THE SUPERSONIC TRANSPORT (SST)

AU (10) Gerathewohl, Siegfried J.

Morris, Everett W.

Sirkis, Joseph A.

RD (11) May 1970

PG (12) 26 Pages

RS (14) FAA-AM-70-9

RC (20) Unclassified report

DE (23) (*flash lamps, *supersonic aircraft), (*jet transport planes, *aviation
safety)

commercial planes, night flight, intensity, colors, visibility

ID (25) *anticollision lights, *supersonic transports

AB (27) For visual detection at night, the aircraft must display conspicuous
light signals to indicate its presence and course at sufficient

distance and time remaining for the pilot to avoid a collision. Considerations about the usefulness of anticollision lights must include such factors as effective light intensity, color, flashing characteristics, field of coverage, and visual detection range as well as flying speed, airplane response, and the pilot's capability to avoid a collision. Results of simulator experiments indicate that the pilot can take evasive actions at relatively high closing speeds under daylight conditions, but no data are available about collision avoidance at night. (Author)

AN (1) AD- 744 245/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Estimated Instantaneous Airborne Traffic in the Pacific.

DN (9) Technical note
AU (10) Dunmire,Chester E.
RD (11) May 1970
PG (12) 13 Pages
PJ (16) FAA-197-622-02R
RC (20) Unclassified report
NO (21) Previously announced as N72-12588.
DE (23) (*civil aviation, air traffic), (*air traffic, *pacific ocean)
counting methods, pacific ocean islands, military requirements, scheduling, predictions, navigation satellites, planning
AB (27) Considerable study is currently being devoted to satellite applications for aeronautical services in oceanic areas. A principal influence on satellite sizing and related system design is the nature of air traffic to be served during busy operating periods throughout the area of satellite coverage. A particular need exists for estimates of the maximum or near peak number of aircraft likely to be airborne simultaneously within the total geographical area planned for satellite services. The purpose of the reports is to develop estimates of instantaneous airborne count (LAC) in the Pacific for each year through 1979 and to provide a brief comparison of Pacific (PAC) versus North Atlantic (NAT) operations in oceanic airspace considered most practical for first generation operational satellite systems. (Author)

AN (1) AD- 744 351/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Estimated Instantaneous Airborne Traffic in the North Atlantic.

DN (9) Technical note
AU (10) Dunmire,Chester E.
RD (11) May 1970
PG (12) 14 Pages
PJ (16) FAA-197-622-02R
RC (20) Unclassified report
NO (21) Previously announced as N72-12585.
DE (23) (*air traffic, *atlantic ocean)
civil aviation, counting methods, scheduling, jet aircraft, navigation satellites, air traffic control systems, periodic variations, planning, predictions
ID (25) north atlantic ocean
AB (27) Considerable study is currently being devoted to satellite applications for aviation services in oceanic areas. A principal influence on satellite sizing and related system design is the nature of air traffic to be served during busy operating periods throughout the area of satellite coverage. The purpose of this report is to develop a data base, for near peak conditions during 1969, in terms of instantaneous airborne count (IAC) in the North Atlantic airspace considered most practical for first generation operational satellite systems. This data base is then used along with internationally agreed annual traffic growth forecasts to provide a projection of expected near peak IAC2 for each year through 1979. (Author)

AN (1) AD- 705 077/XAG
FG (2) 010500
040200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) ECONOMIC STUDIES AND SOME TEST RESULTS FROM FOG DISSIPATION SYSTEMS IN FRANCE.

DN (9) Final rept.
AU (10) Northedge,Robert L.
RD (11) Apr 1970
PG (12) 63 Pages
RS (14) FAA-RD-70-16
RC (20) Unclassified report
NO (21) Trans. of 4 French reports; Part 1, French rept. no. 1 pub. in (France)
v4 n2 p79-83 1969.
DE (23) (*landing fields, fog), (*fog, scattering)

visibility, atmospheric temperature, propane, sprays, operation, costs, airports, supercooling, france

ID (25) weather modification, orly airport, *fog dispersal, translations

AB (27) Contents: Experimental 'In Situ' of the effective temperature threshold of the supercooled fog dispersal installation at Orly airport; Fog dispersal operations on supercooled fog (temperature less than 0C) at Orly confirmed that 0C is the efficiency threshold for a ground base device utilizing liquid propane sprayers; Thermic defogging using the turboclair method -setting-up a pilot installation; Profitability of a defogging installation; Turboclair installation profitability study. (Author)

AN (1) AD- 710 762/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SERVICES

TI (6) ENROUTE IFR PEAK DAY AIR TRAFFIC SURVEY, FISCAL YEAR 1969

AU (10) Dalbow, Theodore L.

RD (11) Apr 1970

PG (12) 209 Pages

RS (14) FAA-MS-70-5

PJ (16) MS-220

RC (20) Unclassified report

NO (21) See also Fiscal year 1968, AD-710 790.

DE (23) (*air traffic, *reviews), (*instrument flight, air traffic) scheduling, civil aviation, air traffic control systems, air transportation, flight paths, commercial planes, takeoff

ID (25) ifr(instrument flight rules), instrument flight rules, traffic peaks

AB (27) The report presents in tabular and graphic form statistical data on peak day IFR departures from the enroute air traffic facilities operated by FAA. Data are presented by altitude and user class for all departures on IFR flight plans on the peak day of each reporting facility during fiscal year 1969. The peak day for a facility is the day during the fiscal year when the largest number of IFR departures is recorded at the facility. It is not the same date for all facilities. Therefore, national totals which summarize all individual facility peak day figures, represent IFR departures on a theoretical, rather than an actual peak day. (Author)

AN (1) AD- 711 268/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) PILOT HEART RATE DURING IN-FLIGHT SIMULATED INSTRUMENT APPROACHES IN A

GENERAL AVIATION AIRCRAFT.

AU (10) Hasbrook, A. Howard

Rasmussen, Paul G.

RD (11) Apr 1970

PG (12) 13 Pages

RS (14) FAA-AM-70-7

RC (20) Unclassified report

DE (23) (*pulse rate, *instrument landings), (*stress(physiology) heart), flight, physiology, aviation medicine, pilots, aviation safety, human factors engineering, instrumentation, simulation, response(biology)

ID (25) *heart

AB (27) Eight instrument rated pilots with flying experience ranging from 600 to 12,271 hours each flew 10 simulated ILS instrument approaches in a single engine, general aviation aircraft equipped with a primary flight display arranged in conventional 'T' configuration. Continuous heart rate data were recorded during each approach. Approaches were flown consecutively at approximate 10-minute intervals, with a 1-minute in-flight rest period prior to each approach. Principal findings were: heart rate increased significantly during each approach; mean increase in heart rate during the approaches was 5.2 beats per minute (BPM) and was of a relatively constant magnitude for each of the 10 approaches; and the overall mean heart rate level decreased on successive approaches for a total of 11.0 BPM for the 10 approaches. The results are discussed in terms of responses to stress introduced by the demands of the task. (Author)

AN (1) AD- 755 888/XAG

FG (2) 010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) National Aviation System Planning Review Conference April 14-17, 1970. Summary Report.

RD (11) Apr 1970

PG (12) 167 Pages

RC (20) Unclassified report

NO (21) Previously announced as N70-4141526. See also Appendix 1, AD-755 884.

AL (22) Availability: Paper copy available from GPO \$1.50 as stock no.

5007-0158 and TD4.2:N21/3.

DE (23) (*civil aviation, *management planning and control) symposia, communication and radio systems, airports, air traffic control systems, inertial navigation, communication satellites(active), navigation satellites, aeronautics, instrument landings, aviation accidents, aviation safety, short takeoff aircraft, vertical takeoff aircraft

ID (25) collision avoidance

AB (27) ;Contents: Satellite communication, navigation and surveillance; Implementation of 50kHz/Y channels for ILS/DME; FAA services at non-publicly owned airports; Flight inspection system; Reduced terminal IFR separation; Control zones for instrument approach; General aviation data systems; Collision avoidance; Increased enroute capacity through increased sectorization airport/airway; Cost allocation study; ATC data acquisition concept; The evolution of STOL/VTOL system; Airport classification and certification; New generation ILS.

21

AN (1) AD- 704 475/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) SRDS PROGRAM, GOALS, ACHIEVEMENTS, TRENDS.

DN (9) Rept. for 1 Apr 69-31 Mar 70.

RD (11) 31 Mar 1970

PG (12) 152 Pages

RC (20) Unclassified report

DE (23) (*air traffic control systems, scientific research), (*aeronautics, scientific research)

navigation, communication and radio systems, aviation safety, weather forecasting, radar equipment, airports

AB (27) Contents: Air traffic control activity; Navigation; and Aviation weather.

AN (1) AD- 705 088/XAG

FG (2) 010600

130600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION ECONOMICS

TI (6) NORTHEAST CORRIDOR AIR TRAFFIC AND HIGH SPEED GROUND TRANSPORTATION.

RD (11) Mar 1970

PG (12) 38 Pages

RC (20) Unclassified report

DE (23) (*air traffic, united states), (*transportation, *passenger vehicles) impact, air transportation, railroads, statistical data, civil aviation, economics

ID (25) *northeast corridor

AB (27) The report reviews the high-speed ground transportation program of the Department of Transportation and studies the impact high-speed rail passenger service may have on air traffic in this critical, congested area of the United States known as the Northeast Corridor. (Author)

AN (1) AD- 755 886/XAG

FG (2) 010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The National Aviation System Plan. Ten Year Plan, 1971-1970.

RD (11) Mar 1970

PG (12) 133 Pages

RC (20) Unclassified report

NO (21) Previously announced as N70-37026.

DE (23) (*civil aviation, *management planning and control)

aviation personnel, airports, air traffic control systems, automation, instrument flight, data transmission systems, communication and radio systems, air traffic control terminal areas, aviation safety, landing aids, air traffic, data processing, meteorological radar, rescues, navigational aids, military operations

ID (25) air route traffic control centers, air space allocation, flight service stations, enroute traffic control systems

AB (27) ;Contents: Aviation forecasts--Fiscal years 1971-1980; En route control and services; Terminal area control and services; Flight services; Airspace allocation and rules; En route navigation; Landing aids; System support; Airports; Manpower; Environmental; Airport and Airway research and development.

AN (1) AD-B032 800/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) Digital Techniques for Test and Evaluation of TACAN Antennas.

DN (9) Technical bulletin no. 3

AU (10) Himmelheber, P. A.

RD (11) Mar 1970
PG (12) 17 Pages
RN (18) GIDEP-E085-2165
RC (20) Unclassified report
AL (22) Distribution limited to U.S. Gov't. agencies only; Test and Evaluation;
9 Jan 79. Other requests for this document must be referred to
Officer-in-Charge, GIDEP Operations Center, Corona, CA 91720.
DE (23) *TACAN
Navigation aids, Antenna components, Digital systems, Test and
evaluation, Computer applications
DL (33) 03

AN (1) AD- 700 930/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) DENVER ARTCC TEST SPECIFICATIONS AND TEST PROCEDURES. NAS EN
ROUTE

STAGE A MODEL 2c VERSION 1 FLIGHT DATA PROCESSING.

RD (11) Feb 1970
PG (12) 199 Pages
RC (20) Unclassified report
DE (23) (*air traffic control systems, test methods)
data processing, specifications, colorado
AB (27) The report presents the guide for accomplishing the System Shakedown
testing phase, Category 'C', for Version I Flight Data Processing (FDP)
at Denver ARTCC. Version I denotes FDP without the use of the computer
updating function. The Category 'C' test effort will exercise and
demonstrate the ability of the hardware, software, and personnel to
perform together the flight data processing required in Version I. The
total system must be proven reliable and maintainable. Additionally,
scheduled and unscheduled transition procedures such as daily start up
and shut down, and failure modes, will be validated during this testing
effort. (Author)

AN (1) AD- 702 777/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) A SUGGESTED ACTION PROGRAM FOR THE RELIEF OF AIR-FIELD
CONGESTION AT

SELECTED AIRPORTS: SUPPLEMENT

AU (10) Million, L. N.
Aikman, E.

Copeland, J. M.
Keepers, W. C.
RD (11) 19 Feb 1970
PG (12) 104 Pages
RC (20) Unclassified report
NO (21) Supplement to report dated Apr 69, AD-689 107.
DE (23) (*airports, *air traffic)
scheduling, construction, runways, navigational aids, takeoff, costs,
cost effectiveness
ID (25) airport congestion, benefit cost analysis, taxiways
AB (27) The report separately identifies and analyzes the possible improvements
needed to prevent or reduce aircraft delays at ten high density
airports with pending congestion problems. The original report dated
April 1969 provided analysis for eighteen of the Nation's highest
density airports which were experiencing serious congestion. Discussion
is presented on the causes contributing to aeronautical congestion and
on the current operational status of each airport. The supplemental
report is concerned primarily with physical construction projects which
will enhance the particular airport's airfield capacity such as
high-speed exit taxiways, parallel runways, and navigational aids. It
also examines certain procedural improvements such as intersection
takeoffs and part-time use of taxiways as VFR runways. Each airport
improvement, where possible, has been evaluated from a cost vs. delay
benefit savings viewpoint. The result is a series of recommended
actions for each surveyed airport with emphasis given to those items
which can be constructed or implemented and placed in operation within
one to four years. (Author)

AN (1) AD- 700 921/XAG
FG (2) 120500
120600
120700
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS
TI (6) USER'S MANUAL: GENERALIZED INFORMATION STORAGE AND RETRIEVAL
QUERY

SYSTEM
AU (10) Dardano, Richard V.
RD (11) Jan 1970
PG (12) 33 Pages
RC (20) Unclassified report
DE (23) (*information retrieval, computer programs)

time sharing, input output devices, data processing, instruction manuals

AB (27) The manual describes the Generalized Information Retrieval Query System and provides procedures and instructions for creating the data base, loading a time-sharing computer, and retrieving specified information via a remote terminal. Using the system, an analyst may load into computer storage, in a pre-defined format, information or data and then selectively retrieve and examine individual records or groups of records containing like characteristics. The system is designed primarily for the solution of individual problems over relatively short time periods.

AN (1) AD- 704 842/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

ECONOMICS

TI (6) AVIATION FORECASTS FISCAL YEARS 1970-1981.

RD (11) Jan 1970

PG (12) 50 Pages

RC (20) Unclassified report

NO (21) See also report dated Jan 69, AD-683 686.

DE (23) (*aeronautics, predictions)

civil aviation, management planning and control, air traffic, fuel consumption, aircraft industry, air traffic control systems, transport aircraft, pilots, aircraft engines

ID (25) forecasting, general aviation aircraft

AB (27) Contents: Highlights of fiscal year 1969; Aviation industry forecasts (Air carrier traffic, Air carrier fleet, General aviation flying and aircraft fleet, Domestic aviation fuel consumption, Civil aircraft and engine production); FAA air traffic activity forecasts (Aircraft operations at airports with FAA traffic control service, FAA en route traffic control activity, FAA flight services); Airmen forecasts (Number of active pilots).

AN (1) AD- 710 797/XAG

FG (2) 010600

050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT

SYSTEMS

TI (6) 1969 U. S. CIVIL AIRMEN STATISTICS.

RD (11) 1970

PG (12) 41 Pages

RC (20) Unclassified report

DE (23) (*flight crews, statistical analysis), (*civil aviation, flight crews) pilots, commercial planes, transport aircraft, personnel management

ID (25) *nonpilot certificates, *airman certificates, *pilot certificates

AB (27) Contents: Active pilot certificates held; Active nonpilot certificates held; and Airman certificates issued.

AN (1) AD- 755 887/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) The National Aviation System Policy Summary.

RD (11) 1970

PG (12) 135 Pages

RC (20) Unclassified report

NO (21) Previously announced as N70-36967.

DE (23) (*civil aviation, *planning)

terminal flight facilities, air traffic control systems, aviation safety, predictions, airports, aircraft noise, air traffic, military operations, automation, navigational aids, landing aids, aviation personnel

AB (27) The purpose of the document is to summarize the Federal Aviation Administration's policies, requirements, goals and criteria for development of a National Aviation System (NAS) over the next 10 years. This NAS Policy Summary thus represents the agency's most current thinking with regard to the missions and objectives set forth in the Federal Aviation Act and related statutes. As currently projected, the Plan is substantially oriented toward facilities and functions.
(Author)

AN (1) AD- 706 744/XAG

FG (2) 050600

140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) FIDELITY OF SIMULATION AND TRANSFER OF TRAINING: A REVIEW OF THE PROBLEM

AU (10) Gerathewohl, Siegfried J.

RD (11) Dec 1969

PG (12) 21 Pages

RS (14) FAA-AM-69-24
RC (20) Unclassified report
DE (23) (*flight simulators, effectiveness), (*transfer of training, analysis) performance(human), correlation techniques, physiology, reaction(psychology), analysis of variance, stress(psychology), pilots
AB (27) The document is concerned with the several kinds of flight simulators available today which are valuable tools for research, training and proficiency determination. They range from simple trainer type devices, which are useful for the learning of specific tasks, to very sophisticated ground-based facilities and aircraft used for crew training under simulated environmental and operational conditions. The various perceptual phenomena and performance modes observed indicate that it is not physical similarity of the devices but psychologic, physiologic, and operational realism which determine fidelity in simulation. In general, the amount of transfer of training appears to be closely related to the degree of fidelity which can be provided.
(Author)

AN (1) AD- 705 087/XAG
FG (2) 010500
010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
ECONOMICS
TI (6) WASHINGTON NATIONAL AND DULLES INTERNATIONAL AIRPORT FORECASTS, FISCAL YEARS 1970-1981.

RD (11) Nov 1969
PG (12) 40 Pages
RC (20) Unclassified report
DE (23) (*airports, predictions), (*air traffic, predictions) civil aviation, military transportation, air transportation, district of columbia, cargo, virginia, maryland, tables(data), operation
ID (25) washington national airport, forecasting, dulles international airport
AB (27) The study presents forecasts for eight major traffic categories at both Washington National Airport and Dulles International Airport for fiscal years 1970 through 1981. These categories are air carrier passengers, all other passengers, express, freight, mail and aircraft movements for air carrier, general aviation and military. The report focuses on the period through fiscal 1976 and gives specific projections for each year, 1970 through 1976. Forecasts for fiscal years 1980 and 1981 are also included to meet longer-range planning needs. (Author)

AN (1) AD- 704 473/XAG
FG (2) 060500
131200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION
MEDICINE
TI (6) THE SAFETY SIGNIFICANCE OF AIRCRAFT ACCIDENT POST MORTEM FINDINGS
AU (10) Siegel,P. V.
Mohler,S. R.
Cierebiej,A.
RD (11) Oct 1969
PG (12) 15 Pages
RS (14) FAA-AM-69-18
RC (20) Unclassified report
DE (23) (*aviation accidents, pathology) mortality rates, aviation safety, cardiovascular diseases, aviation medicine, atherosclerosis, aging(physiology), aircraft
ID (25) *accident investigations
AB (27) A review of post mortem examinations obtained in 1968 of pilot victims of general aviation aircraft accidents reveals that 51 percent of the pilot victims were studied by pathologists. The post mortem examination population above was taken from 687 pilot fatalities in general aviation accidents occurring within the United States in 1968. The percent of post mortem examinations obtained in 1968 represents considerable progress in comparison to earlier years. Without an aircrew autopsy, the probable cause almost always consists of a higher proportion of conjecture than is otherwise the case. The full utility of the important data resulting from these examinations is going to depend, however, upon the addition of certain quantitative data to that in the current verbally descriptive protocol almost universally encountered. This is particularly pertinent in relation to computer assisted analytic studies of broad scale concerning post mortem findings. (Author)

AN (1) AD- 696 089/XAG
FG (2) 010600
010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT STANDARDS SERVICE
TI (6) EVALUATION OF ENROUTE PROCEDURES STANDARDS
AU (10) Richards, Harold R.

Parr, Frank
RD (11) Sep 1969
PG (12) 71 Pages
PJ (16) FAA-67-460-1
RC (20) Unclassified report
DE (23) (*FLIGHT PATHS, STATISTICAL ANALYSIS), (*INSTRUMENT FLIGHT, STANDARDS)

AIR TRAFFIC, DATA

ID (25) data acquisition, evaluation

AB (27) Data were recorded from 658 aircraft in the enroute IFR environment. Aircraft samples included Air Carrier, Military, and General Aviation operations. Altitudes of aircraft sampled ranged from the Minimum Enroute Altitude (MEA) through Flight Level (FL) 450. Electronic radials were checked before, during, and after data acquisition periods. Deviations from airway/route radials were analyzed statistically to determine mean and standard deviation. Data were found to be normally distributed. Deviation from centerline was not affected by aircraft category (air carrier, military, or general aviation). Deviations increased as distance from the navigation facility increased. Deviations were affected by altitude groupings (above or below FL-180). Flight Technical Error (pilotage factor) was found to be linear rather than angular. It was determined that present airspace structure for enroute airways/routes could be modified with substantial savings in airspace. (Author)

AN (1) AD- 697 678/XAG

**FG (2) 010309
050300**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SUPERSONIC

TRANSPORT DEVELOPMENT

TI (6) SUMMARY OF CURRENT ECONOMIC STUDIES OF THE UNITED STATES SUPERSONIC

TRANSPORT.

RD (11) Sep 1969

PG (12) 50 Pages

RC (20) Unclassified report

DE (23) (*supersonic aircraft, *economics), (*jet transport planes, *commercial planes)

air traffic, air transportation, aircraft industry, predictions, sonic boom, feasibility studies

ID (25) investment returns, *supersonic transports

AB (27) The three studies discussed in the report provide a range in their base

case 1990 market estimates for the SST under sonic boom restrictions from 500 to 800 airplanes. The low market estimate of 500 SST's, the FAA base case, is sufficient to enable the Government to recover all of its investment for development and construction of two prototypes plus a small return. The basic conclusion is that the program is not only economically viable but reasonably profitable to all participants over a wide range of assumptions. (Author)

AN (1) AD- 701 760/XAG

**FG (2) 010500
130200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIRPORTS SERVICE

TI (6) REPORT ON FAA'S 1969 GENERAL AVIATION PUBLIC AIRPORT FINANCIAL SURVEY

AU (10) Bowers, Chester G.

RD (11) Sep 1969

PG (12) 33 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, airports), (*airports, economics)

statistical analysis, terminal flight facilities, costs, maintenance, budgets, planning, questionnaires, management planning and control

ID (25) management information systems

AB (27) The report presents an analysis of the results of the 1969 General Aviation Public Airport Financial Survey. The survey was conducted by the System Planning Division, Airports Service, with supporting services provided by the Office of Management Systems. The purpose of the survey was to obtain current airport revenue and expense data to better understand the financial operations of the Nation's general aviation airports and to serve as a basis for recommending Federal assistance programs related to airport development. The canvas was made for the Calendar Year 1968, the latest year of record. (Author)

AN (1) AD- 702 443/XAG

FG (2) 061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) TIME-ZONE EFFECTS ON THE LONG DISTANCE AIR TRAVELER

AU (10) Siegel, P. V.

Gerathwohl, Siegfried J.

Mohler, Stanley R.

RD (11) Sep 1969
PG (12) 13 Pages
RS (14) FAA-AM-69-17
RC (20) Unclassified report
DE (23) (*air transportation, fatigue(mechanics))
jet aircraft, rhythm(biology), behavior, time, diurnal variations
ID (25) circadian rhythm
AB (27) Findings are presented on the consequences of rapidly crossing numerous time zones, such as occurs in present-day jet aircraft travel.
Conclusions reached by FAA researchers and scientists of other laboratories are included, together with recommendations for overcoming time-zone fatigue. These recommendations are for use by the individual long distance traveler. A practical formula is given which describes how one may compute the rest period following a long distance trip. This period is to enable the biological rhythms to rephase in order that the traveler will be in proper physical and mental condition to pursue his responsibilities. (Author)

AN (1) AD- 688 766/XAG

**FG (2) 010600
050500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) HIJACKING. SELECTED REFERENCES.

DN (9) Annotated bibliography 1961-1969
AU (10) O'Brien,Ann
RD (11) Jun 1969
PG (12) 25 Pages
RS (14) FAA Bibliographic List-18
RC (20) Unclassified report
DE (23) (*air traffic, interception), (*criminology, *civil aviation)
bibliographies, reviews, symposia, law, feasibility studies,
deterrence, attitudes(psychology), handbooks, statistical data, cuba,
transportation, abstracts
ID (25) aircraft hijacking
AB (27) The document is a selected annotated bibliography which was compiled to assist individuals working on the problem of aircraft hijackings.
(Author)

AN (1) AD- 694 002/XAG

**FG (2) 010500
131200**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

TI (6) ENVIRONMENTAL EFFECTS ON AIRPORT PAVEMENT GROOVE PATTERNS.

DN (9) Final rept.
AU (10) Kilpatrick,George A.
RD (11) Jun 1969
PG (12) 43 Pages
RS (14) FAA-RD-69-37
PJ (16) FAA-450-702-07E
RC (20) Unclassified report
DE (23) (*ALL WEATHER AVIATION, AVIATION SAFETY), (*RUNWAYS, *LANDING AIDS)
DETERIORATION, AIRPORTS, ASPHALT, CONCRETE, PAVEMENTS,
ATMOSPHERIC
TEMPERATURE, ATMOSPHERIC PRECIPITATION, FRICTION, LIFE EXPECTANCY,
AIR
TRAFFIC, WEAR RESISTANCE, MAINTENANCE
ID (25) EVALUATION, *HYDROPLANING, *PAVEMENT GROOVING, TAXIWAYS
AB (27) Results of installing different groove patterns on a variety of asphalt and concrete taxiways at airports with varying climatic regimes are presented. Methods and procedures effecting the installation of groove patterns in airport pavements are discussed, as well as the resulting changes in the groove patterns over the observation period of seven to eighteen months. Some deterioration of grooves occurred in the taxiways with asphalt surfaces under high temperature conditions.
Recommendations based on these tests are presented for future grooving projects. (Author)

AN (1) AD- 699 497/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

**TI (6) ANNUAL REPORT OF OPERATIONS UNDER THE FEDERAL AIRPORT ACT
(24th).**

RD (11) 30 Jun 1969
PG (12) 63 Pages
RC (20) Unclassified report
NO (21) See also AD-687 150.
DE (23) (*airports, management planning and control)
construction, design, safety, standards, federal budgets, data
processing, civil aviation, distribution(economics)
ID (25) federal airport act, federal aid airport programs
AB (27) Contents: Organization for carrying out the act; Airport planning;
Airport development; Protection of the public interest in airports; and

Airport design, construction, and safety standards.

AN (1) AD-A950 290/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Aircraft Noise and Sonic Boom Research and Development.

DN (9) Annual rept. no. 3 for period ending 31 Mar 69

AU (10) Hoover, I. H.

RD (11) 17 Jun 1969

PG (12) 18 Pages

RC (20) Unclassified report

NO (21) Presented at the Annual R&D Report to Industry (3rd).

DE (23) *SONIC BOOM, *AIRCRAFT NOISE

NOISE REDUCTION

ID (25) U/A reports

AN (1) AD- 689 106/XAG

FG (2) 010307

010200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK NATIONAL FLIGHT

INSPECTION D IV

TI (6) EVALUATION OF MDC/EAL STOL DEMONSTRATION.

DN (9) Technical rept.

AU (10) Bryant, Barney B.

Parr, Frank

RD (11) May 1969

PG (12) 113 Pages

PJ (16) FAA-68-460-3

RC (20) Unclassified report

AL (22) PORTIONS OF THIS DOCUMENT ARE ILLEGIBLE. SEE INTRODUCTION SECTION OF

THIS ANNOUNCEMENT JOURNAL FOR CFSTI ORDERING INSTRUCTIONS.

DE (23) *FLIGHT PATHS), (*SHORT TAKEOFF AIRCRAFT, (*AIR TRAFFIC CONTROL TERMINAL AREAS, AIR TRAFFIC)

TRANSPORT AIRCRAFT, MANEUVERABILITY, NEW YORK, SCHEDULING,

TURNING

FLIGHT

ID (25) breguet 941 aircraft, evaluation

AB (27) Data were collected during a demonstration of the Breguet STOL

transport aircraft in the New York City area. Analysis of data was

directed to the terminal area maneuvering requirements. Turning radii

for 80 knots IAS with a 15 degree bank angle appeared correct for use as a minimum standard in the development of departure routes and holding patterns. The angle between successive route segments limits the minimum distance between the way-points used to establish the intercepted segment. (Author)

23

AN (1) AD- 689 107/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) A SUGGESTED ACTION PROGRAM FOR THE RELIEF OF AIRFIELD CONGESTION AT

SELECTED AIRPORTS

AU (10) Million, L. N.

Copeland, J. M.

Hornsby, J. T.

Keepers, W. C.

RD (11) Apr 1969

PG (12) 213 Pages

RC (20) Unclassified report

DE (23) (*airports, *air traffic)

terminal flight facilities, runways, airport control towers, air traffic control systems, air traffic control terminal areas, navigational aids, construction, costs, cost effectiveness, aircraft noise, site selection, air transportation

ID (25) airport congestion, taxiways

AB (27) This report separately identifies and analyzes the possible improvements leading to reduced aircraft delays at eighteen of the Nation's highest density airports. Discussion is presented on the causes contributing to aeronautical congestion and on the current operational status of each airport. The report is concerned primarily with physical construction projects which will enhance the particular airport's airfield capacity such as high-speed exit taxiways, parallel runways, and navigational aids. It also examines certain procedural improvements such as intersection takeoffs and part-time use of taxiways as VFR runways. Each airport improvement, where possible, has been evaluated from a cost vs. delay benefit savings viewpoint. The result is a series of recommended actions for each surveyed airport with emphasis given to those items which can be constructed or implemented and placed in operation within one to four years. (Author)

AN (1) AD- 690 469/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) AIRCRAFT ICE PROTECTION: REPORT OF SYMPOSIUM APRIL 28-30 1969.

RD (11) Apr 1969

PG (12) 389 Pages

RC (20) Unclassified report

DE (23) (*AIRCRAFT, *ICE)

PROTECTION, AIRFOILS, AIRCRAFT ENGINES, STANDARDS, DEICING SYSTEMS, CLOUDS, SIMULATORS, FREEZING, MAINTENANCE, DESIGN, SYMPOSIA,

AVIATION

SAFETY

AB (27) Contents: Review of icing criteria; Description, history and status of NASA-Lewis icing research tunnel; Ice protection for turbine engines; Laboratory testing of engine ice systems; Small turbine engine and inlet ice protection; Ice tunnel testing at the Naval Air Propulsion Test Center; A water spray tanker for icing simulation; Icing factors, water spray tankers and specifications; Airframe design for protection against icing; Flight testing in dry air and icing cloud; Techniques used to determine artificial ice shapes and ice shedding, characteristics of unprotected airfoil surfaces; Experiments with icephobic surfaces; Air force operational problems attributable to airframe and powerplant icing; Naval operational experience; Ice protection systems, commercial maintenance experience; Airline operational experience in icing environment; Discussions following the presentations are included.

AN (1) AD- 691 188/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) ANNUAL NATIONAL AVIATION SYSTEM PLANNING REVIEW CONFERENCE

(1st), APRIL

23, 24,25 1969, WASHINGTON, D. C.

DN (9) Summary rept.

RD (11) Apr 1969

PG (12) 58 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, symposia)

air traffic, aircraft landings, takeoff, airport control towers, commercial planes, aircraft industry, airports, united states government, federal budgets, aviation accidents, aviation safety, navigational aids, communication systems, planning, management planning and control, reports

AB (27) This document is a summary report of the first annual planning review conference convened April 23, 1969, by the Federal Aviation Administration under the auspices of the Department of Transportation. The three day conference marked the inaugural occurrence of a joint industry/government effort toward a more effective method of planning for the national aviation system. (Author)

AN (1) AD- 697 943/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) METHODOLOGY IN THE ASSESSMENT OF COMPLEX HUMAN PERFORMANCE: THE EFFECTS

OF SIGNAL RATE ON MONITORING A DYNAMIC PROCESS

AU (10) Chiles,W. Dean

Bruni,Cheryl Beveridge

Lewis,Robert A.

RD (11) Apr 1969

PG (12) 14 Pages

RS (14) FAA-AM-69-6

RC (20) Unclassified report

DE (23) (*PERFORMANCE(HUMAN), (*VISUAL SIGNALS, MONITORS)

VISUAL SIGNALS), DYNAMICS, PROBABILITY, FREQUENCY, REACTION(PSYCHOLOGY), TIME, MEASURING INSTRUMENTS, SIGNAL LIGHTS, NUMERICAL METHODS AND PROCEDURES, PERFORMANCE(HUMAN),

STATISTICAL

ANALYSIS, STUDENTS, RELIABILITY

ID (25) MENTAL ARITHMETIC, SIGNAL RATE

AB (27) Male subjects were tested after extensive training as two five-man 'crews' in an experiment designed to examine the effects of signal rate on the performance of a task involving the monitoring of a dynamic process. Performance was measured using three signal rates with several levels of workload induced by the simultaneous performance of different combinations of tasks involving reaction time, mental arithmetic, pattern discrimination, and group problem solving. (Author)

AN (1) AD- 697 944/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) CONSISTENCY OF PERFORMANCE CHANGE AND AUTONOMIC RESPONSE AS A FUNCTION

OF EXPRESSED ATTITUDE TOWARD A SPECIFIC STRESS SITUATION

AU (10) Pearson, David W.

Thackray, Richard I.

RD (11) Apr 1969

PG (12) 10 Pages

RS (14) FAA-AM-69-7

RC (20) Unclassified report

DE (23) (*stress(psychology), (*performance(human) performance(human)), predictions), questionnaires, students, anxiety, attitudes(psychology), threat evaluation, perception(psychology), applied psychology, aviation personnel, test methods, electrocardiography, electrodes

ID (25) autonomic response, aviation occupations, electroshock, fear of shock reactions, heart, stress behavior

AB (27) Aviation occupations often require the performance of tasks under stressful conditions. Attempts to relate differences among individuals in performance under stress to personality variables have generally not been successful. Based upon responses to a fear of shock item in an attitude questionnaire describing numerous stressful situations, subjects were classified as high fear of shock or low fear of shock types. Results indicate significant differences between groups in both sets of measures and support the hypothesis that attitude questionnaires may be used to predict performance and bodily responses to specific stress situations. (Author)

AN (1) AD- 697 945/XAG

FG (2) 050800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) PATTERNS OF PHYSIOLOGICAL ACTIVITY ACCOMPANYING PERFORMANCE ON A

PERCEPTUAL-MOTOR TASK

AU (10) Thackray, Richard I.

RD (11) Apr 1969

PG (12) 14 Pages

RS (14) FAA-AM-69-8

RC (20) Unclassified report

DE (23) (*performance(human), (*attention, performance(human)) stress(psychology)), students, display systems, reaction(psychology), physiology, time, tracking, test methods, electrophysiology, analysis

of variance, air traffic controllers, radar equipment

ID (25) heart, perceptual motor tasks

AB (27) Air traffic controllers are required to spend considerable periods of time observing radar displays. Yet, information regarding physiological measures which best reflect the attentional process in complex vigilance tasks is generally lacking. As an initial approach to gaining such information, a number of physiological measures obtained during performance of a demanding visual-motor (tracking) task were examined in order to determine which measures best differentiated the performance periods from intertrial rest periods. (Author)

AN (1) AD- 710 790/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SERVICES

TI (6) ENROUTE IFR AIR TRAFFIC SURVEY: PEAK DAY FISCAL YEAR 1968

AU (10) Wisner, Leland F.

RD (11) Apr 1969

PG (12) 210 Pages

RS (14) FAA-MS-69-3

RC (20) Unclassified report

NO (21) See also report dated Sep 67, AD-667 604.

DE (23) (*air traffic, *reviews), (*instrument flight, air traffic) commercial planes, jet transport planes, civil aviation, air traffic control systems, altitude, statistical data, scheduling

ID (25) ifr(instrument flight rules), instrument flight rules, traffic peaks

AB (27) The primary objective of the survey is to present in tabular and graphic form statistical data on peak day IFR departures from the enroute air traffic facilities operated by FAA. Contained in the report are data by altitude and user class for all departures on IFR flight plans on the peak day of each reporting facility during fiscal year 1968. The peak day for a facility is the day during the fiscal year when the largest number of IFR departures is recorded at the facility. It is not the same date for all facilities. Therefore, national totals which summarize all individual facility peak day figures, represent IFR departures on a theoretical, rather than an actual peak day. (Author)

AN (1) AD- 685 609/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) AIR TRAFFIC AND AIRPORT CONGESTION. SELECTED REFERENCES.

DN (9) Rept. for 1960-1968.
RD (11) Mar 1969
PG (12) 43 Pages
RS (14) FAA Bibliographic List-17
RC (20) Unclassified report
DE (23) (*air traffic, bibliographies), (*airports, bibliographies)
management planning and control, failure, passenger vehicles, roads,
terminal flight facilities, buildings, air traffic control systems,
flight paths, systems engineering, landing fields, transport aircraft,
abstracts
ID (25) *airport congestion
AB (27) The document contains a selected, partially annotated listing of
journal articles, newspaper articles, papers and technical reports on
the subject of congestion - in the air, on the ground and at the
terminal building. (Author)

AN (1) AD- 686 381/XAG
FG (2) 050300
170703

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND
DEVELOPMENT SERVICE**

TI (6) BENEFIT/COST ANALYSIS OF APPROACH LIGHTING SYSTEMS.

DN (9) Staff study
AU (10) Kal, John C.
RD (11) Mar 1969
PG (12) 48 Pages
RS (14) FAA-RD-69-23
PJ (16) FAA-197-641-01R
RC (20) Unclassified report
DE (23) (*AIRCRAFT LANDINGS, NAVIGATIONAL AIDS), (*APPROACH LIGHTS, COST
EFFECTIVENESS)
ANALYSIS, LIGHTING EQUIPMENT, ECONOMICS, WEATHER, SITE SELECTION,
AIRPORTS, VISIBILITY, APPROACH INDICATORS, SELECTION, BUDGETS, AIR
TRAFFIC CONTROL SYSTEMS
ID (25) COST ANALYSIS
AB (27) The analysis provides information on how to place newly developed lower
cost approach lighting systems into the National Airspace System.
Candidate locations are identified by Airport Instrument Approach
levels reflecting weather minimums occurrence and benefit-cost
relationships. (Author)

AN (1) AD- 698 289/XAG
FG (2) 060500
131200
230100

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE**

TI (6) SEAT BELT INJURIES IN IMPACT

AU (10) Snyder, R. G.
Crosby, W. M.
Snow, C. C.
Young, J. W.
Hanson, P.
RD (11) Mar 1969
PG (12) 25 Pages
RS (14) FAA-AM-69-5
RC (20) Unclassified report
NO (21) Presented at Michigan Univ. Medical School Sesquicentennial Symposium
on the Prevention of Highway Injury, Highway Safety Institute, Ann
Arbor, 19-21 Apr 67.
DE (23) (*MOTOR VEHICLE ACCIDENTS, *WOUNDS AND INJURIES), (*SAFETY BELTS,
WOUNDS AND INJURIES)
PASSENGER VEHICLES, PRIMATES, PREGNANCY, PROTECTION, PATHOLOGY,
DESIGN,
IMPACT, STATISTICAL ANALYSIS, SAFETY
AB (27) Although the seat belt has been demonstrated to provide effective
reduction of injuries and fatalities in automobile accidents by
preventing ejection, a pattern of injuries directly attributable to
impingement on the belt itself is becoming evident. This paper surveys
the clinical evidence of restraint system injuries, discusses gross
biomechanical mechanisms of trauma, and evaluates the potential of four
principal types of restraint systems in producing injuries. New
results are presented comparing the lap belt, diagonal, three-point,
and double torso restraint systems in experimental primate impacts
utilizing the 6571st Aeromedical Research Laboratory's Daisy
Decelerator. The double shoulder harness (with lap belt) appears to
offer the greatest protection of the systems compared, while the single
diagonal belt (without lap belt) has been demonstrated to be the most
dangerous type in certain impact situations. A seat belt system
properly installed and properly worn still offers the single best
protection for the automotive occupant during an impact. (Author)

AN (1) AD- 683 306/XAG

FG (2) 010300
050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF POLICY
DEVELOPMENT

TI (6) GENERAL AVIATION AIRCRAFT OPERATING COSTS.

DN (9) Staff rept.

RD (11) Feb 1969

PG (12) 48 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, air transportation), (*air transportation, *costs)
operation, passenger vehicles, correlation techniques, statistical
data, aviation personnel, maintenance, spare parts

ID (25) *general aviation aircraft

AB (27) Costs were estimated for representative new general aviation aircraft,
average general aviation aircraft in a type group, and aircraft in
business and personal use. By type, costs are broken down into
variable and fixed costs; by unit, into annual, hourly, per aircraft
mile, and per available seat-mile costs. Costs at various utilization
rates as well as at utilization rates typical of the aircraft are
included. The cost estimates in the report were derived from
information from various sources concerning aircraft operating costs
and performance. Because the costs are representative or typical of an
aircraft in a particular type group rather than actual costs, they do
not apply to any specific aircraft. Annual and hourly operating costs
for representative new aircraft, for average aircraft in the fleet, and
for business and personal aircraft are shown, at utilization rates
typical of these aircraft. These and other data are discussed fully in
the text. The report also compares the cost of operating an aircraft
to the cost of flying by airlines and the cost of operating an
automobile. Compared to other modes of travel, the use of a general
aviation aircraft for business or personal transportation is generally
more expensive. (Author)

AN (1) AD- 687 152/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
MANAGEMENT
SYSTEMS

TI (6) GENERAL AVIATION STATISTICS: HOURS AND MILES FLOWN, NUMBER OF
AIRCRAFT, FUEL CONSUMPTION, PRODUCTION, ACCIDENTS, AIR TAXI

AU (10) Goring, Sylvia M.

RD (11) Feb 1969

PG (12) 18 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, statistical data)
statistical analysis, flight, fuel consumption, aircraft, real time,
aviation accidents

ID (25) air taxi operators

AB (27) Contents: Eligible registered general aviation aircraft on record with
FAA--December 31, 1967 and 1962; Eligible aircraft registered with FAA
by type and by state and other area--December 31, 1967; Number of
aircraft and estimated hours flown in general aviation, by type of
aircraft--1967; U.S. eligible general aviation aircraft--December 31,
1967-1978; Estimated hours flown in general aviation by type of
flying--1950-1967; Estimated miles flown in general aviation by type
of flying--1950-1967; Estimated miles flown and fuel consumed in
general aviation flying--1950-1967; Fuel consumed by general aviation
and air carrier aircraft--calendar years 1967 and 1966; Shipments of
general aviation fixed-wing aircraft--1957-1967; General aviation
aircraft shipments--1967; Aircraft accidents, fatalities, and accident
rates--1957-1967; Total number of scheduled air taxi operators and
aircraft--January 1, 1964-October 1, 1967; Summary of scheduled air
taxi operators--1964-1968.

AN (1) AD- 683 686/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF POLICY
DEVELOPMENT

TI (6) AVIATION FORECASTS FISCAL YEARS 1969-1980.

RD (11) Jan 1969

PG (12) 44 Pages

RC (20) Unclassified report

NO (21) See also AD-668 835.

DE (23) (*aeronautics, predictions)

civil aviation, management planning and control, air traffic, air
traffic control systems, transport aircraft, airports, fuel consumption

ID (25) forecasting, general aviation aircraft

AB (27) Contents: Highlights of fiscal year 1968; Aviation industry forecasts
(Air carrier traffic, Air carrier fleet, General aviation flying and
aircraft fleet, Domestic aviation fuel consumption, Civil aircraft and
engine production); FAA air traffic activity forecasts (Aircraft
operations at airports with FAA traffic control service, FAA en route
traffic control activity, FAA flight services).

AN (1) AD- 685 610/XAG

FG (2) 010305
010307
200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF NOISE ABATEMENT
TI (6) CONFERENCE ON STOL TRANSPORT AIRCRAFT NOISE CERTIFICATION.
DN (9) Technical rept.
RD (11) 30 Jan 1969
PG (12) 176 Pages
RS (14) FAA-NO-69-1
PJ (16) FAA-550-003-03H
RC (20) Unclassified report
NO (21) Proceedings of the Industry/Government Conference on STOL Transport Aircraft Noise Certification (1st), Washington, D. C., 30 Jan 69.
DE (23) (*short takeoff aircraft, *noise), (*transport aircraft, aircraft noise)
design, engine noise, propeller noise, air traffic control systems, economics, shrouded propellers, symposia
ID (25) lift fans, noise reduction
AB (27) The proceedings of the conference included papers on STOL development, STOL noise sources, STOL noise abatement operations, and aircraft noise evaluation and are assembled for use in future activities related to STOL noise certification. Examples and figures are given illustrating representative STOL configurations and associated noise characteristics as well as STOL port designs. (Author)

AN (1) AD- 686 047/XAG
FG (2) 010500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) THE NATIONAL AVIATION SYSTEM PLAN 1970 - 1979. BOOK I. SYSTEM REQUIREMENTS AND CRITERIA.
RD (11) 27 Jan 1969
PG (12) 200 Pages
RC (20) Unclassified report
DE (23) (*aeronautics, management planning and control), (*air traffic control systems, management planning and control), (*navigation, aeronautics), (*communication systems, aeronautics), (*weather, aeronautics), (*airports, management planning and control)
standards, air transportation, air traffic
ID (25) forecasting
AB (27) The document is divided into the following subject areas: planning forecasts, air traffic control, air navigation, communications,

aviation weather and other supporting services, and airports.

AN (1) AD- 686 048/XAG
FG (2) 010500
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) THE NATIONAL AVIATION SYSTEM PLAN 1970-1979. BOOK II.
RD (11) Jan 1969
PG (12) 105 Pages
RC (20) Unclassified report
DE (23) (*air transportation, management planning and control)
air traffic control systems, aircraft landings, airports, airport radar systems, communication systems, data transmission systems, navigational aids, weather, aeronautics, training, costs
AB (27) Contents: Aviation forecasts - fiscal years 1970-1979; Air traffic control; Air navigation; Communications; Aviation weather and other supporting services; and Airports.

AN (1) AD- 688 826/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIRPORTS SERVICE
TI (6) AVIATION DEMAND AND AIRPORT FACILITY REQUIREMENT FORECASTS FOR MEDIUM AIR TRANSPORTATION HUBS THROUGH 1980.
RD (11) Jan 1969
PG (12) 239 Pages
RC (20) Unclassified report
DE (23) (*civil aviation, terminal flight facilities), (*terminal flight facilities, predictions)
airports, statistical data, planning, urban areas, reviews, air transportation, urban planning, united states
ID (25) standard metropolitan statistical areas
AB (27) The report presents a complementary extension of a previous publication on airport facility requirements for large air transportation hubs. The large and medium hub forecasts supplement each other and enhance advance planning of the financial and physical airport facility development required to meet the air transportation needs of 1980. They are also intended to assist in promoting the development of comprehensive, long-range metropolitan airport system plans by airport and local government planning officials. (Author)

AN (1) AD- 689 740/XAG
FG (2) 010600
060500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) MEDICAL FACTORS IN U. S. GENERAL AVIATION ACCIDENTS

AU (10) Siegel,P. V.

Mohler,S. R.

RD (11) Jan 1969

PG (12) 9 Pages

RS (14) FAA-AM-69-2

RC (20) Unclassified report

DE (23) (*aviation accidents, *aviation medicine), (*civil aviation, aviation accidents)

casualties, psychology, weather, carbon monoxide, hypoxia, alcohols, insecticides, sprays, cardiovascular diseases, aging(physiology), medical personnel

ID (25) *general aviation accidents, general aviation aircraft, suicide

AB (27) About ninety percent of fatal U. S. general aviation accidents involve factors other than the aircraft or outside circumstances. This necessarily brings the flight surgeon into the mainstream of aviation safety activities. The paper describes some relatively recent accidents which illustrate the roles played by medical factors.

Preventive programs are discussed which have a direct focus on the medical factors which will potentially contribute to future accidents.

(Author)

AN (1) AD- 686 837/XAG

FG (2) 050200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT

SYSTEMS

TI (6) FAA THESAURUS OF TECHNICAL DESCRIPTORS. THIRD EDITION, INFORMATION

RETRIEVAL BULLETIN.

RD (11) 1969

PG (12) 67 Pages

RC (20) Unclassified report

NO (21) Second edition available as PB-169 543.

DE (23) (*dictionaries, information retrieval), (*vocabulary, civil aviation) aeronautics, air traffic control systems, aviation medicine, united

states government

ID (25) thesauri

AB (27) This edition, with 3,123 descriptors, includes new terms established since the last publication, in November, 1965. Further, it is presented in the format developed by Project LEX for the Thesaurus of Engineering and Scientific Terms, issued recently by the Department of Defense. The purpose of this thesaurus is to provide a definitive, working vocabulary for the field of civil aviation; its terms or descriptors serve as reference standards for the indexing and retrieval of information. The thesaurus is designed to permit effective specific descriptions of documents on input and answerable search queries on output. (Author)

AN (1) AD- 688 827/XAG

FG (2) 010500

010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) SRDS PROGRAM: GOALS, ACHIEVEMENTS, TRENDS.

DN (9) Progress rept. 1 Apr 68-31 Mar 69.

RD (11) 1969

PG (12) 148 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, reviews)

terminal flight facilities, air traffic control systems, display systems, radar tracking, weather forecasting, communication systems, search radar, runways, navigational aids, communication satellites(active), all weather aviation, aircraft landings, marker lights

ID (25) terminal radar control, tracon(terminal radar control)

AB (27) Material in the report is presented in separate chapters for each of the Systems Research and Development Service technical development divisions, i.e., Air Traffic Control, Communications, Navigation, Environmental, Frequency Management, and Systems Analysis Divisions. (Author)

AN (1) AD- 693 118/XAG

FG (2) 010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) FAA CATALOG OF TECHNICAL REPORTS: INFORMATION RETRIEVAL BULLETIN,

**CALENDAR YEAR 1968 ACCESSIONS NUMBERS 6800001 - 6801534. VOLUME I.
MASTER INDEX AND AUTHOR INDEX.**

RD (11) 1969
PG (12) 409 Pages
RC (20) Unclassified report
DE (23) (*AERONAUTICS, *CATALOGS)
INDEXES, REPORTS, INFORMATION RETRIEVAL, AIRCRAFT, AERODYNAMICS,
AIR
TRAFFIC CONTROL SYSTEMS, AVIATION MEDICINE, NAVIGATION
AB (27) Reports generated for the Federal Aviation Administration during 1968
are listed under the accession number and author.

AN (1) AD- 693 170/XAG

**FG (2) 010300
010600**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) FAA UNION LIST OF SERIALS: INFORMATION RETRIEVAL BULLETIN, 1968.

RD (11) 1969
PG (12) 145 Pages
RC (20) Unclassified report
DE (23) (*aeronautics, *periodicals)
indexes, information retrieval, catalogs, terminal flight facilities,
aircraft, air traffic control systems, civil aviation, navigation
AB (27) The FAA Union List of Serials is a list of all serial publications held
by the 10 FAA libraries. Serial publications include magazines,
newspapers, annuals, and loose-leaf services. The union list is
intended as a tool for reference librarians in locating a serial issue
requested by a library user, for library patrons in determining whether
an FAA library has a given title, and for agency management in
evaluating the collections of the FAA libraries. The union list is an
author/title listing, that is, the serial publications are listed
either under title or under author/title. (Author)

AN (1) AD- 696 590/XAG

**FG (2) 010600
050200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

**TI (6) FAA CATALOG OF TECHNICAL REPORTS. INFORMATION RETRIEVAL
BULLETIN.**

**CALENDAR YEAR 1967 ACCESSIONS NUMBERS 19858-22000. VOLUME I.
MASTER
INDEX.**

RD (11) 1969
PG (12) 307 Pages
RC (20) Unclassified report
NO (21) See also Volume 2, AD-696 591.
DE (23) (*civil aviation, *indexes)
reports, information retrieval
ID (25) *master index
AB (27) The FAA Catalogs of Technical Reports for 1967 provide indexes of
reports selected by and indexed for the Federal Aviation Administration
during 1967. FAA Accession Numbers 67 19858 - 67 22000 are included.
Five indexes--master or accession number, subject, report and contract
number, author and corporate source, and series title--are prepared by
computer programs. (Author)

AN (1) AD- 696 591/XAG

**FG (2) 010600
050200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

**TI (6) FAA CATALOG OF TECHNICAL REPORTS. INFORMATION RETRIEVAL
BULLETIN.**

**CALENDAR YEAR 1967 ACCESSIONS NUMBERS 19858-22000. VOLUME 2.
AUTHOR
INDEX.**

RD (11) 1969
PG (12) 261 Pages
RC (20) Unclassified report
NO (21) See also Volume 1, AD-696 590 and Volume 3, AD-696 592.
DE (23) (*civil aviation, indexes)
reports, information retrieval
ID (25) *author indexes
AB (27) The FAA Catalogs of Technical Reports for 1967 provide indexes of
reports selected by and indexed for the Federal Aviation Administration
during 1967. FAA Accession Numbers 67 19858 - 67 22000 are included.
Five indexes--master or accession number, subject, report and contract
number, author and corporate source, and series title--are prepared by
computer programs. (Author)

AN (1) AD- 696 592/XAG

**FG (2) 010600
050200**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) FAA CATALOG OF TECHNICAL REPORTS. INFORMATION RETRIEVAL BULLETIN.

CALENDAR YEAR 1967 ACCESSIONS NUMBERS 19858-22000. VOLUME 3. REPORT/CONTRACT NUMBER INDEX AND SERIES TITLE INDEX.

RD (11) 1969

PG (12) 65 Pages

RC (20) Unclassified report

NO (21) See also Volume 1, AD-696 590.

DE (23) (*civil aviation, indexes)
reports, information retrieval

ID (25) *report numbers

AB (27) The FAA Catalogs of Technical Reports for 1967 provide indexes of reports selected by an indexed for the Federal Aviation Administration during 1967. FAA Accession Numbers 67 19858 - 67 22000 are included. Five indexes--master or accession number, subject, report and contract number, author and corporate source, and series title--are prepared by computer programs. (Author)

AN (1) AD- 680 631/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) NAVIGATION EQUIPMENT CAPABILITY ANALYSIS PROGRAM (NECAP II).

DN (9) Project rept.

AU (10) Pithan, Leonard
Parr, Frank

RD (11) Dec 1968

PG (12) 92 Pages

RS (14) FAA-FS-66-250-57

PJ (16) FAA-RD-330-001-01N

RC (20) Unclassified report

DE (23) (*civil aviation, navigational aids), (*navigational aids, reliability(electronics))

instrument landings, instrument flight, radio receivers, alignment, errors, theodolites, calibration, aeronautical laboratories, mobile, distance measuring equipment, position finding, statistical tests

ID (25) bearing(direction), errors

AB (27) 214 VOR receivers in 111 aircraft were given bench, airborne, and ramp checks to identify receiver error. (Author)

AN (1) AD- 683 759/XAG

FG (2) 010300

050600

130800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) THE MAN IN THE MAINTENANCE RELIABILITY SYSTEM.

RD (11) 05 Dec 1968

PG (12) 298 Pages

RC (20) Unclassified report

NO (21) Proceedings of the Annual Maintenance Symposium (4th).

DE (23) (*civil aviation, *maintenance personnel)

maintenance, symposia, reliability, aircraft equipment, aircraft engines, maintainability, aviation safety, manpower, cost effectiveness, learning, test equipment, efficiency, planning, training, job analysis

ID (25) ate(automatic test equipment), automatic, test equipment, avionics

AB (27) This publication is a compilation of papers presented on aviation maintenance personnel. The papers indicate what is being done to keep the man in the maintenance reliability system current in his vocation and also forecast future trends and needs. (Author)

AN (1) AD- 684 806/XAG

FG (2) 200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) SONIC BOOM RESEARCH (1958-1968)

AU (10) Sands, Johnny M.

RD (11) Nov 1968

PG (12) 23 Pages

RC (20) Unclassified report

DE (23) (*sonic boom, reviews)

united states government, test facilities, test methods, theory, reports, bibliographies

AB (27) The United States Government has been actively engaged in sonic boom research since 1958 in an effort to learn more about this phenomenon and the means of controlling it. To this end, extensive testing has been done in the field as well as in the laboratory environment. This document is a brief history of sonic boom research. Part I presents a chronological listing of the various field research programs, identifies the Government agencies involved and provides a brief summary of the work accomplished. Part II describes some of the laboratory experiments and theoretical studies conducted under Government sponsorship. Part III contains a listing of publications resulting from these research programs and tells how these documents may be obtained. (Author)

AN (1) AD- 687 151/XAG
FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIR TRAFFIC SERVICE
TI (6) REGISTERED GENERAL AVIATION AIRCRAFT BY COMMUNITY SIZE: 1963-1968.
RD (11) Nov 1968
PG (12) 83 Pages
RC (20) Unclassified report
DE (23) (*civil aviation, statistical data)
aircraft, population, united states
ID (25) counties, *general aviation aircraft
AB (27) Since January 1, 1961 the number of registered general aviation aircraft has increased almost 50 percent from 74,947 to 112,420. The study updates the 1961 analysis and provides planners with a picture of general aviation development in each community from 1963 to 1968. (Author)

AN (1) AD- 677 462/XAG
FG (2) 050600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) EQUAL EMPLOYMENT OPPORTUNITY: SELECTED REFERENCES
AU (10) Poehlman, Dorothy J.
RD (11) Oct 1968
PG (12) 11 Pages
RS (14) FAA Bibliographic List-16
RC (20) Unclassified report
DE (23) (*EMPLOYMENT, BIBLIOGRAPHIES), (*UNITED STATES GOVERNMENT, LABOR)
MANAGEMENT ENGINEERING, PATTERN RECOGNITION, LAW, PSYCHOLOGICAL TESTS,
SOCIOMETRICS, ECONOMICS, AGRICULTURE, URBAN AREAS, POPULATION, FEMALES,
MANPOWER, EDUCATION, SYMPOSIA
ID (25) CIVIL RIGHTS, EQUAL EMPLOYMENT OPPORTUNITY PROGRAMS, NEGROES, SOCIAL CHANGE
AB (27) The Federal Aviation Administration Headquarters Library has acquired representative publications relevant to equal employment opportunity programs. This bibliography is a selected list of those titles, which are available in the FAA Headquarters Library. (Author)

AN (1) AD- 696 588/XAG
FG (2) 010309
210400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SUPERSONIC TRANSPORT DEVELOPMENT
TI (6) FUEL CONSIDERATIONS IN THE U. S. SUPERSONIC TRANSPORT PROGRAM
AU (10) Saia, Joseph C.
RD (11) 24 Oct 1968
PG (12) 27 Pages
RC (20) Unclassified report
NO (21) Presented at the Jet Fuel Quality Symposium, San Antonio, Texas, 22-24 Oct 68.
DE (23) (*jet transport planes, *jet engine fuels)
commercial planes, supersonic aircraft, fuel systems, kerosene, cost effectiveness, test methods, symposia
ID (25) *jet a kerosene, *supersonic transport planes
AB (27) The type of fuel selected for use in the United States Supersonic Transport (SST) is commercial Jet A kerosene. The importance of the fuel cost factor in SST direct operating cost, and the reasons for excluding the use of commercial Jet B aviation turbine fuel for the SST, are briefly discussed in this paper. A general description of the SST aircraft and engine fuel systems, and the typical environmental conditions to which the fuel will be exposed, are included. The SST fuels test programs are summarized. (Author)

AN (1) AD- 676 230/XAG
FG (2) 010300
050800
200100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF NOISE ABATEMENT
TI (6) AIRCRAFT NOISE EVALUATION.
DN (9) Technical rept.
AU (10) Sperry, William C.
RD (11) Sep 1968
PG (12) 77 Pages
RS (14) FAA-NO-68-34
PJ (16) FAA-550-003-03H
RC (20) Unclassified report
DE (23) (*AIRCRAFT NOISE, *AUDITORY PERCEPTION)
STANDARDS, MATHEMATICAL PREDICTION, PSYCHOACOUSTICS, INTENSITY,

TABLES(DATA)

ID (25) EVALUATION, GRAPHS(CHARTS)

AB (27) The Federal Aviation Administration, in response to Public Law 90-411, has begun the rulemaking process leading to the certification of aircraft for noise. The basic element in the regulation criteria is the noise evaluation measure designated as effective perceived noise level, EPNL, which is a single number evaluator of the subjective effects of aircraft noise on human beings. Simply stated, EPNL consists of instantaneous perceived noise level corrected for tones and duration. The history of the development of EPNL is presented and a critical evaluation of its validity is made. The computational procedures are described in detail including both integration and approximate methods for calculating duration corrections. Examples are given in the appendices. (Author)

AN (1) AD- 686 670/XAG

FG (2) 010600

061100

131200

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) DRUG AND TOXIC HAZARDS IN GENERAL AVIATION

AU (10) Dille, Robert

Mohler, Stanley R.

RD (11) Sep 1968

PG (12) 10 Pages

RN (18) FAA-AM-68-16

RC (20) Unclassified report

NO (21) Presented at Air Medics and Flying Physicians Association, Texas Medical Association, Houston, 2 May 68.

DE (23) (*AVIATION ACCIDENTS, DRUGS)

TOXICITY, HAZARDS, ALCOHOLS, PESTICIDES, CARBON COMPOUNDS, MONOXIDES,

AMPHETAMINES, ANTIHISTAMINICS, STEROIDS, PARASYMPATHOLYTIC AGENTS,

HYPNOTICS AND SEDATIVES, AVIATION SAFETY

ID (25) accident investigations

AB (27) The paper discusses both the potential and the documented roles of drugs, alcohol, pesticides and carbon monoxide in general aviation accidents. (Author)

AN (1) AD- 676 730/XAG

FG (2) 130800

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) A METHOD FOR ACHIEVING EQUIPMENT RELIABILITY, MAINTAINABILITY AND LOGISTICS SUPPORT.

DN (9) Final rept.

AU (10) Barkalow, Raymond R.

RD (11) 30 Aug 1968

PG (12) 23 Pages

RS (14) FAA-RD-68-15

PJ (16) FAA-200-Area

RC (20) Unclassified report

DE (23) (*electronic equipment, *reliability(electronics)), (*logistics, maintainability)

maintenance, spare parts, communication systems, failure(electronics), transistors, costs, air traffic control systems, contracts

AB (27) Three basic approaches to a completed program effort are discussed. An economical, yet effective, approach to reliability is presented with suggested considerations for maintainability of equipments. The term 'failure rate' is discussed and illustrated for use in determining spare parts requirements and possible application to a computer for logistic support. A new maintenance concept is presented and is based on the provisioning formula. (Author)

AN (1) AD- 681 881/XAG

FG (2) 010300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) UTILIZATION OF TIME/FREQUENCY IN COLLISION AVOIDANCE SYSTEMS.

RD (11) Aug 1968

PG (12) 162 Pages

RC (20) Unclassified report

NO (21) Minutes of Meeting, Federal Aviation Administration, Washington, 27-28 Aug 68.

DE (23) (*air traffic control systems, aviation safety)

loran, time, frequency, systems engineering, aircraft equipment, clocks, timing devices, satellites(artificial), tracking, radiofrequency spectroscopy, standards, symposia

ID (25) *collision avoidance, synchronization

AB (27) Topics: Federal Aviation Administration time/frequency - collision avoidance program; Relationship of time/frequency - CAS to future T/F systems; Brief review of the collision avoidance problem and discussion of time/frequency - CAS ground station factors; Remarks on World-Wide Time Synchronization by VLF; Precise time and time interval (PTTI) activities and plans (USAF); Discussion of synchronization by transportable clocks; Use of loran-C for timing; Loran-C/D systems concept; Timing potential of loran-C/D; Navy time/frequency programs; Application of time/frequency techniques in military station keeping; Satellite synchronization; Satellite tracking and data acquisition (STADAN) frequency combiner and microelectronic clock; Astrodata timing; GEOS time synchronization; ATS time synchronization; Satellite synchronization techniques; World-wide time review; Remarks on the application of RF spectroscopy of stores ions to frequency standards.

AN (1) AD- 748 285/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) Cost Estimates for National Airspace System Facilities.

DN (9) Technical manual

AU (10) Van Duyne,Edward N.
Quiram,Leonard L.

RD (11) Aug 1968

PG (12) 194 Pages

PJ (16) FAA-197-641-04R

RC (20) Unclassified report

DE (23) (*airports, costs)
air traffic control systems, runways, navigational aids, landing aids, maintenance, logistics, electronic equipment, cost effectiveness

ID (25) cost estimates

AB (27) The manual presents summary and detail cost information for Federal Aviation Administration facilities. The primary purpose of the manual is to provide a general purpose reference document on facility functions and costs for use as a planning tool.

AN (1) AD- 674 862/XAG

FG (2) 060400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) CIRCADIAN RHYTHMS: SELECTED REFERENCES

AU (10) Heller,Louise Annus

RD (11) Jul 1968

PG (12) 86 Pages

RS (14) FAA Bibliographic List-15

RC (20) Unclassified report

DE (23) (*RHYTHM(BIOLOGY)
BIBLIOGRAPHIES), ECOLOGY, PSYCHOPHYSIOLOGY, BIOCHEMISTRY, RESPIRATION,
BODY TEMPERATURE, RESPONSE(BIOLOGY), PULSE RATE,
EXERCISE(PHYSIOLOGY),
RELAXATION(PHYSIOLOGY), FLIGHT

AB (27) Contents: Ecological factors; Psychological factors; Physiological factors -- body chemistry, respiration, alimentation, heart-rate, temperature and other somatic responses; Work-rest cycle; Long distance flights; Medical aspects; Animal and plant studies.

AN (1) AD- 674 414/XAG

FG (2) 170703

250400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) ARTCC MAINTENANCE COMMUNICATION, JACKSONVILLE.

DN (9) Final rept.

AU (10) Miller,William R.

RD (11) Jun 1968

PG (12) 49 Pages

RS (14) FAA-RD-68-6

RC (20) Unclassified report

DE (23) (*air traffic control systems, *intercommunication systems),
(*telephone systems, air traffic control systems)
maintenance, voice communications, telephone equipment, secure communications, costs, scheduling, modules(electronics), maintainability, public address systems, florida, redundant components

AB (27) The proposed Maintenance Communications System for NAS Stage A, Jacksonville ARTCC, provides an interphone switching system that meets the voice maintenance communications requirements for the facility. The best technical/economical approach is to expand the existing PBX and 300 Interphone Switching Systems to meet the maintenance requirement. The heart of the Maintenance Communication System is the System Engineer and Assistant System Engineer positions established at the System Maintenance Monitor Console. The system as proposed is limited to interphone and does not include any radio communication requirements. (Author)

AN (1) AD- 687 150/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) ANNUAL REPORT OF OPERATIONS UNDER THE FEDERAL AIRPORT ACT
(23d).
RD (11) 30 Jun 1968
PG (12) 58 Pages
RC (20) Unclassified report
DE (23) (*airports, management planning and control)
civil aviation, air traffic, airports, transport aircraft, commercial
planes, construction, costs, tables(data)
AB (27) The report presents a general analysis of the oversight activities of
the Federal Aeronautics Agency for the fiscal year ended June 30, 1968.

AN (1) AD- 670 583/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND
STATISTICS DIV
TI (6) 1966 CENSUS OF AIR TAXI OPERATORS.
RD (11) May 1968
PG (12) 30 Pages
RC (20) Unclassified report
DE (23) (*civil aviation, statistical data)
commercial planes, pilots, flight crews, transport aircraft, airports,
scheduling, flight, fuel consumption, cargo, air transportation
ID (25) air taxi operations, *air taxi operators
AB (27) Data are given on operators, aircraft, hours flown, departures,
passengers, cargo, fuel consumed in 1966. Also listed are airports
with and without FAA towers, authorization to carry mail, scheduled,
non-scheduled, large and small operators, ATR pilots, employees as well
as comparison with 1967 and 1962 survey of general aviation. Appendix
includes definitions of types of flying, etc. (Author)

AN (1) AD- 675 521/XAG
FG (2) 050900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE
TI (6) A RETROSPECTIVE ANALYSIS OF AEROMEDICAL CERTIFICATION DENIAL
ACTIONS

JANUARY 1961-DECEMBER 1967

AU (10) Siegel,P. V.
Booze,Charles F., Jr
RD (11) May 1968
PG (12) 15 Pages
RS (14) FAA-AM-68-9
RC (20) Unclassified report
DE (23) (*AVIATION PERSONNEL, MEDICAL EXAMINATION)
AVIATION MEDICINE, STANDARDS, AGING(PHYSIOLOGY), SELECTION,
PATHOLOGY,
CARDIOVASCULAR DISEASES, MENTAL DISORDERS, STATISTICAL ANALYSIS,
MORTALITY RATES, TABLES(DATA)
AB (27) The study quantifies several unknowns and/or uncertainties with respect
to medical and general descriptive attributes of airmen denied medical
certification. Data are presented concerning age, sex, occupation,
total flying time, and medical characteristics of denied airmen.
Certification actions at the appellate level are discussed to include
medical problems associated with appeals to the Federal Air Surgeon and
the FAA administrator. An analysis of mortality experience among
airmen exempted from the regulations due to cardiovascular problems is
also presented. (Author)

AN (1) AD- 675 522/XAG
FG (2) 060400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION
MEDICINE
TI (6) THE EFFECTS OF BODY THERMAL STATE ON MANUAL PERFORMANCE
AU (10) Vaughan,J. A.
Higgins,E. A.
Funkhouser,G. E.
Galerston,Elinore M.
RD (11) May 1968
PG (12) 13 Pages
RS (14) FAA-AM-68-13
RC (20) Unclassified report
DE (23) (*BODY TEMPERATURE, PERFORMANCE(HUMAN))
MOTOR REACTIONS, HANDS, ENVIRONMENT, RESPONSE(BIOLOGY),
PERFORMANCE(HUMAN), COLD WEATHER TESTS, HEAT TOLERANCE
AB (27) Thirty-six young men were exposed for 2 hours to environmental
temperatures of 10, 26.7, or 46C. Measurements of rectal and skin
temperature, heart rate and respiratory rate were made, and average
skin and average body temperatures were calculated. Manual performance

consisted of standardized peg tests for hand and finger dexterity, and a written motor coordination test. Converted scores showed no significant differences in peg placing at any of the thermal states studied. Men exposed to the neutral environment scored highest in the finger dexterity tests, but values for motor coordination were greater in the heat than in the other two environments. These data suggest that coarse hand movements are independent of body thermal state, but that more discrete tasks involving hand and finger dexterity, and motor coordination, can be most efficiently performed in warmer environments which promote at least thermally neutral values of skin and deep body temperature. (Author)

AN (1) AD- 676 528/XAG

**FG (2) 010600
170703**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE

TI (6) EVALUATION OF HELICOPTER STEEP SLOPE GCA OPERATIONS

**AU (10) Hunting, Allan W.
Fleming, Russell S.**

RD (11) May 1968

PG (12) 69 Pages

RC (20) Unclassified report

DE (23) (*helicopters, *aircraft landings)

approach, tactical air support, army training, flight paths, civil aviation, standards, glide path systems, simulation, landing aids

ID (25) ch-47 aircraft, evaluation, graphs(charts), h-47 aircraft, h-1 aircraft, h-13 aircraft, uh-1 aircraft

AB (27) The purpose of the study was to evaluate steep approaches flown in helicopters used for training and tactical operations, and to record data for use in the development of precision approach procedures for rotary wing aircraft. These data can also be applied to civil procedures standards and common system approach facilities. In this evaluation the following factors were considered: (a) Flyability of glide slope angles chosen; (b) Airspeed/vertical velocity envelopes; (c) Lengths of instrument approach segments; (d) Location of ground point of intercept (GPI); (e) Deceleration distances; (f) Decision height; (g) Required obstruction clearance (ROC); (h) Lead fix requirements; (i) Exposure time from decision height (DH) to touchdown; (j) Deceleration during the descent; (k) GCA procedure techniques; (l) GCA antenna alignment changes in azimuth and elevation; (m) Comparison between stabilized and unstabilized helicopters. The maximum usable effective angle was found to be 12 degrees. The flight parameters,

approach procedure, and obstacle clearance requirements appropriate to steep approach angles were derived for application to Army training and tactical use. Conclusions and recommendations of particular relevance to civil procedures are noted. (Author)

AN (1) AD- 683 292/XAG

**FG (2) 061200
090100**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) BIOMEDICAL APPLICATIONS OF A COMMERCIAL CAPACITANCE TRANSDUCER

**AU (10) Podolak, Edward
Kinn, James B.
Westura, Edwin E.**

RD (11) Mar 1968

PG (12) 13 Pages

RS (14) FAA-AM-68-3

RC (20) Unclassified report

**DE (23) (*MEDICAL EQUIPMENT, TRANSDUCERS), (*THORAX, TRANSDUCERS) SENSITIVITY, EXTREMELY LOW FREQUENCY, CAPACITORS, RECORDING SYSTEMS,
MOTION**

AB (27) A capacitive displacement transducer with a linear response and constant sensitivity for a frequency range of 0-1,000 Hz is described. Its application to measurement of chest wall motions was verified using static displacements from flat and curved surfaces and both metal and human tissue. The transducer has been used to obtain recordings of apex motion, heart sounds, brachial and radial pulses. (Author)

AN (1) AD- 665 973/XAG

**FG (2) 010300
010500**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) ADVANCED SCANNING BEAM GUIDANCE SYSTEM FOR ALL WEATHER LANDING.

DN (9) Summary rept.

**AU (10) Spinner, Lawrence N.
Bencivenga, Vincent L.**

RD (11) Feb 1968
PG (12) 45 Pages
RS (14) FAA-RD-68-2
PJ (16) FAA-320-204-01N
RC (20) Unclassified report
DE (23) (*LANDING AIDS, *ALL WEATHER AVIATION), (*INSTRUMENT LANDINGS, AIRCRAFT LANDINGS)
APPROACH, AZIMUTH, RUNWAYS, AIRBORNE, RADAR SCANNING, RADAR ANTENNAS,
ANTENNA RADIATION PATTERNS, AVIATION SAFETY, SUPERHIGH FREQUENCY, DISTANCE MEASURING EQUIPMENT, DISPLAY SYSTEMS
ID (25) *ADVANCED INTEGRATED LANDING SYSTEM, *INSTRUMENT LANDING SYSTEMS,
TOUCHDOWN
AB (27) The report contains a description and the test results of a development model of an advanced landing aid for all weather approach and landing. The system operates in the microwave frequency region (15.4 to 15.7 GHz) and provides precision azimuth and elevation guidance and range to touchdown to approaching aircraft. Also included in the system is a radar mode which operates as a primary radar to indicate aircraft position on a direct viewed storage tube (PAR mode). The signals are radiated from an azimuth antenna which scans horizontally and an elevation antenna which scans vertically. One cycle of the system operation occupies 200 milliseconds during which time Azimuth guidance, Elevation guidance, range function, and PAR mode are time shared and synchronized. The elevation antenna scans over an angle range 0 to 10 degrees and the azimuth scans from 5 degrees left to 5 degrees right of runway centerline. Clearance signals are provided to 35 degrees from runway centerline. Azimuth and elevation angles are resolved to increments of 0.01 degree. A summary of the test data compiled is presented and recordings of the effects of interfering aircraft on the courses defined by the system are shown. It is concluded that the design objectives contained in the specification are met. (Author)

AN (1) AD- 666 559/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) AIR TRAFFIC CONTROL RADAR BEACON SYSTEM (ATCRBS) MODE 3/A IDENTITY
REPLY AND EQUIVALENT MODE C ALTITUDE CODE.

DN (9) Technical rept.
AU (10) Wise, Kenneth
RD (11) Feb 1968
PG (12) 20 Pages
RS (14) FAA-RD-68-1
PJ (16) FAA-242-008-05
RC (20) Unclassified report
DE (23) (*air traffic control systems, *radar beacons)
coding, altitude, transponders, tables(data), maintenance, airborne, radar equipment, digital systems, identification systems, efficiency
ID (25) *air traffic control radar beacon systems
AB (27) The Federal Aviation Administration and the International Civil Aviation Organization (ICAO) have adopted a digital code for automatic pressure-altitude transmission via the Air Traffic Control Radar Beacon System (ATCRBS). Salient features of the code are: (1) One-hundred foot digitizing increments; (2) range from -1000 feet to +126,750 feet; (3) unambiguous unit-distance characteristic; and, (4) altitude transmission with respect to a fixed datum of 1013.2 millibars (29.92 inches of mercury) . This report is directed to aviation maintenance personnel to provide them with code tables which are needed for maintenance of airborne altitude reporting equipment. The code is tabulated for altitude increments in increasing numeric order and for the equivalent octal Mode 3/A identity reply in increasing numeric order. (Author)

AN (1) AD- 667 733/XAG
FG (2) 010600
050600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) GENERAL READINGS ON THE FAA. SELECTED REFERENCES
AU (10) Flynn, Lois
RD (11) Feb 1968
PG (12) 16 Pages
RS (14) FAA Bibliographic List-14
RC (20) Unclassified report
DE (23) (*AERONAUTICS, BIBLIOGRAPHIES), (*CIVIL AVIATION, BIBLIOGRAPHIES), (*UNITED STATES GOVERNMENT, AIR TRANSPORTATION)
AVIATION SAFETY, PILOTS, ORGANIZATIONS, HISTORY, LAW, AIR TRAFFIC CONTROL SYSTEMS, AIR TRAFFIC, MOTION PICTURES, PERIODICALS, MANAGEMENT
PLANNING AND CONTROL
ID (25) *FEDERAL AVIATION ADMINISTRATION
AB (27) Contents: General information; History; Legislative background;

Aviation forecasts; Air traffic control; Facts for pilots;
Miscellaneous; Periodical sources; FAA films (attachment).

AN (1) AD- 669 003/XAG
FG (2) 050100
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF POLICY
DEVELOPMENT
TI (6) FAA AND THE EXPANDING AIRMAIL TRAFFIC.
DN (9) Staff study.
RD (11) Feb 1968
PG (12) 42 Pages
RC (20) Unclassified report
DE (23) (*AIR TRANSPORTATION, DOCUMENTS), (*AIR TRAFFIC, DOCUMENTS)
STANDARDS, MAINTENANCE, REVIEWS
ID (25) air taxi operations, federal aviation administration
AB (27) The study reviews the growth of mail transportation by air during the
past 15 years (1953-1967) with emphasis on the recent upsurge in volume
which saw the nation's airlines fly 970,988,000 ton-miles of mail in
1967. This volume was 30 percent greater than in 1966 and almost double
the 1965 total. The report is directed toward the implications which
recent developments in mail transportation by air hold for the aviation
industry and for the Federal Aviation Administration. (Author)

AN (1) AD- 687 156/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) A PROGRAM TO PROVIDE APPROACH AND LANDING AIDS AT SCHEDULED
AIR CARRIER
TURBOJET AIRPORTS, STATEMENT OF REQUIREMENTS.
DN (9) Memorandum rept.
RD (11) Jan 1968
PG (12) 87 Pages
RC (20) Unclassified report
DE (23) (*airports, *landing aids), (*approach, navigational aids)
specifications, jet transport planes, reviews
AB (27) To determine the requirements for approach and landing aids for air
carrier jets it was necessary to review all airports currently
certificated for air carrier service. There are approximately 545 such
airports within the 48 states. Of this number it was estimated that
approximately 345 would receive turbojet service by 1972. These 345
airports were than examined in detail. (Author)

AN (1) AD- 689 775/XAG
FG (2) 010200
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT
STANDARDS SERVICE
TI (6) COURSE REVERSAL FLIGHT SIMULATOR EVALUATION.
DN (9) Project rept.
AU (10) Bryant, Barney B.
RD (11) Jan 1968
PG (12) 20 Pages
RC (20) Unclassified report
DE (23) (*TURNING FLIGHT, OPERATIONS RESEARCH)
FLIGHT SIMULATORS, FLIGHT PATHS, APPROACH, WIND, FLIGHT TESTING
AB (27) A simulator study was made of procedure turns to establish the distance
required to complete the turn when it is begun at a specified point
(fix). DC-6 and B-720 flight simulators were used in the evaluation.
Several types of procedure turn were made at different altitudes.
Adverse winds of near maximum expected velocities were applied. The
evaluation shows that when a positive radio fix is used to mark the
point to commence course reversal, a significant reduction in the
required maneuvering area may be expected when a 'teardrop' course
reversal is flown in a procedure turn instead of the Classic
'45/180/45' or the '80/260' maneuvers. (Author)

AN (1) AD- 689 776/XAG
FG (2) 010500
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT
STANDARDS SERVICE
TI (6) HELICOPTER ENROUTE IFR.
DN (9) Project rept.
AU (10) Hunting, Allan W.
Parr, Frank
RD (11) Jan 1968
PG (12) 36 Pages
PJ (16) FAA-65-920-6
RC (20) Unclassified report
DE (23) (*helicopters, *aviation safety)
flight paths, air traffic, scheduling, standards, air traffic control
terminal areas, pilots, operation
ID (25) ifr (instrument flight rules), instrument flight rules
AB (27) An evaluation of pilots flying selected VOR routes was conducted under
simulated IFR operation to assess the vertical and lateral flight
technical error. Radar flight track tracings and movie film were used

to collect data. A statistical analysis of the data shows that stabilized helicopters may be safely operated IFR within 25 1/2 miles of a VOR station when at least 500 feet of obstruction clearance is provided in the area two nautical miles on each side of the radial providing course guidance with reduced obstruction clearance beyond 2 NM to a maximum lateral distance of 3 NM. (Author)

AN (1) AD- 667 603/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) SCHEDULED AIR TAXI OPERATORS AS OF OCTOBER 1967.

RD (11) 1968

PG (12) 70 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, statistical data)

commercial planes, scheduling, air traffic, air transportation, aircraft industry, flight paths

ID (25) *air taxi operations

AB (27) Reports received from the FAA regions as of October 1, 1967 revealed that there were 165 Scheduled Air Taxi Operators. They operated 685 aircraft, of which 198 were single-engine, 455 were multiengine, 23 were turbine, and 9 helicopters. As of October 1, 1967, scheduled air taxi operators totaled 165, an increase of 42 percent over the 116 reported as of November 1, 1966. In less than four years, these operators have grown from 12 to the present number. The number of aircraft utilized by scheduled air taxi operators during this same period has grown from 72 to 685. (Author)

AN (1) AD- 674 412/XAG

FG (2) 010500

010600

040200

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) GOALS, ACHIEVEMENTS, TRENDS.

DN (9) Rept. for 1 Jul 67-30 Jun 68

RD (11) 1968

PG (12) 259 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, scientific research), (*air traffic control systems, scientific research), (*meteorology, civil aviation)

airports, meteorological instruments, aviation safety, all weather aviation, antennas, radio equipment, design, cost effectiveness, communication and radio systems, visibility, landing aids, navigation

AB (27) This report is intended to serve the needs of SRDS management and the interests of agency Services, Offices, Regions, Centers concerned, and the aviation community. It covers SRDS progress for the period from July 1, 1967 to June 30, 1968. It reports on selected System Modernization Category Program Elements and Subprograms as described in the SRDS FY 1968 Technical Program Document. Selected In-Service Improvement and Long Range Category Subprograms are also reported when they involve efforts of particular interest. Reports on items which are related to approved Development Project Plans are so identified, as is the source of the requirement for each effort. The material in this report is presented in separate chapters for each of the SRDS technical development divisions; i. e., ATC, Communications, Navigation, Environmental, Frequency Management, and Systems Analysis divisions. (Author)

AN (1) AD- 687 144/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) SCHEDULED AIR TAXI OPERATORS AS OF NOVEMBER 1968

AU (10) Wisner, Leland F.

RD (11) 1968

PG (12) 98 Pages

RC (20) Unclassified report

NO (21) See also AD-667 603.

DE (23) (*civil aviation, statistical data)

commercial planes, air transportation, flight paths, transport aircraft, helicopters, scheduling

ID (25) *air taxi operators

AB (27) Reports received from the seven FAA regions as of November 1, 1968, revealed that there were 240 Scheduled Air Taxi Operators. They operated 1272 aircraft, of which 318 were single-engine, 814 were multiengine, 122 were turbine, and 18 helicopters. It is hoped that these statistics will furnish interested parties some indication of the trends of the scheduled air taxi operators. (Author)

AN (1) AD- 692 663/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) SYSTEMS RESEARCH AND DEVELOPMENT SERVICE SCIENTIFIC AND TECHNICAL

REPORTS, CY-1968.

RD (11) 1968

PG (12) 11 Pages

RC (20) Unclassified report

DE (23) (*air traffic control systems, *bibliographies), (*aircraft landings, *all weather aviation)

approach, display systems, failure(mechanics), navigation, guidance, monitors, airports, reports

AB (27) The reports were prepared in connection with various scientific or technical projects, tasks, or contracts which support the Service's mission to analyze, formulate and design the improvement and modernization of the National Airspace System, and bear information of interest to the general aviation industry and community. Included for each report are the SRDS code number, title, author, date of the report, and project number, followed by a brief statement regarding the report. (Author)

AN (1) AD- 666 122/XAG

FG (2) 010400

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) PROCEEDINGS OF A SYMPOSIUM ON PILOT WARNING INSTRUMENTS.

RD (11) 12 Dec 1967

PG (12) 187 Pages

RC (20) Unclassified report

DE (23) (*flight instruments, *warning systems)

symposia, aviation accidents, military research, cockpits, pilots, feasibility studies, hazards, altimeters, infrared detectors

ID (25) *pilot warning instruments

AB (27) Contents: Mid-air collision statistics; U. S. Army presentation; U. S. Navy presentation; U. S. Air Force presentation; The use of reduced bandwidth cockpit TV for PWI; NBAA looks at PWI; AOPA position paper; ATA presentation; Air line pilots association's views on PWI; Preliminary status report on feasibility studies of a pilot warning indicator; Open-access C. W. Doppler technique for collision-hazard warning; PWI frequency considerations; Altitude Rho/theta pilot warning

instrument; Infrared studies; Sperry Gyroscope Company experiments; Current and future programs in PWI; PWI bibliography list; COPAG PWI characteristics working paper; Advisory Circular, AC 00-23, near midair collision study.

AN (1) AD- 675 943/XAG

FG (2) 010600

061000

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) AVIATION MEDICINE FAA - 1966

AU (10) Siegel, P. V.

RD (11) Dec 1967

PG (12) 12 Pages

RS (14) FAA-AM-67-25

RC (20) Unclassified report

DE (23) (*aviation medicine, reviews)

medical examination, aviation personnel, standards, aviation safety, aviation accidents, education, medical personnel, civil aviation

AB (27) A review is presented of the nation-wide program which: establishes the standards of medical fitness for pilots, air traffic controllers, and other personnel connected with civil aviation; provides a certification program which involves the periodic medical examination of these personnel; provides medical investigation for aircraft accidents; conducts medical research on a variety of subjects of importance to civil aviation safety; operates an occupational health program for the agency's 44,000 employees; and provides for the education of civil airmen on medical subjects of importance to safe flying. (Author)

AN (1) AD- 662 414/XAG

FG (2) 010500

130200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) ACCESS TO AIRPORTS: SELECTED REFERENCES.

RD (11) Nov 1967

PG (12) 11 Pages

RS (14) FAA Bibliographic List-12

RC (20) Unclassified report

DE (23) (*airports, transportation), (*transportation, bibliographies)

urban planning, passenger vehicles, air transportation, railroads,

abstracts

AB (27) Contents: General; Air transportation; Motor transportation; Rail transportation; Skylounge.

AN (1) AD- 663 089/XAG

FG (2) 010500

050300

170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) ALTERNATIVE APPROACHES FOR REDUCING DELAYS IN TERMINAL AREAS.

DN (9) Staff study

AU (10) Meisner, Milton

Van Duyne, Edward

Faison, Walter

RD (11) Nov 1967

PG (12) 136 Pages

RS (14) FAA-RD-67-70

PJ (16) FAA-177-611-01R

RC (20) Unclassified report

DE (23) (*AIR TRAFFIC CONTROL TERMINAL AREAS, OPERATIONS RESEARCH), (*SCHEDULING, *AIRPORTS), (*AIR TRAFFIC CONTROL SYSTEMS, OPTIMIZATION)

COST EFFECTIVENESS, AUTOMATION, REDUCTION, AIR TRAFFIC

AB (27) The study presents alternative approaches, regulatory and technical, to reducing aircraft delays in terminal areas. Delays and benefits versus cost were examined for runway, taxiway, and ILS improvements; new airports; air traffic control procedural changes; automation of the final approach control function; and reduction of schedule peaks. The specific airports studied were: Kennedy International, La Guardia, Newark, Washington National, Chicago O'Hare, Los Angeles, San Francisco and Oakland. (Author)

AN (1) AD- 664 369/XAG

FG (2) 010309

010500

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA AERONAUTICAL CENTER

TI (6) AGENDA: FEDERAL AVIATION ADMINISTRATION MAINTENANCE SYMPOSIUM, MAINTAINABILITY AND RELIABILITY OF AIRCRAFT SYSTEMS, NOVEMBER 7, 8,

9

1967.

RD (11) Nov 1967

PG (12) 7 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, reliability), (*commercial planes, maintainability) symposia, state-of-the-art reviews, maintenance, fuel systems, aircraft equipment, data processing, test equipment, test sets, supersonic aircraft, aircraft engines, ground support equipment, automatic

AN (1) AD- 664 388/XAG

FG (2) 010309

010400

010500

170703

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA AERONAUTICAL CENTER

TI (6) MAINTAINABILITY CONCEPT DEVELOPMENTS FOR CATEGORY II LANDING SYSTEMS

AU (10) Hemingway, James L.

RD (11) 09 Nov 1967

PG (12) 11 Pages

RC (20) Unclassified report

NO (21) Presented at FAA Maintenance Symposium 'Maintainability and Reliability of Aircraft Systems', Oklahoma City, Okla. 7-9 Nov 1967.

DE (23) (*landing aids, maintainability), (*commercial planes, instrument landings), (*instrument landings, aircraft equipment) navigational aids, flight control systems, ground support equipment, airborne, runways, standards, automatic pilots, automatic pilots, air traffic control systems, flight testing

AB (27) The report discusses the airborne and ground ILS system, a little about CAT II airport lighting equipment, facility monitoring, maintenance time limitations and FAA surveillance. There is a lot of guidance equipment used and required in the airplane for CAT II operations - altimeters, airspeed, vertical speed, attitude, direction, communications, autopilot, approach coupler, flight director, warning systems, automatic throttle, etc. A discussion is given in general terms on how the FAA maintains the integrity of its equipment.

AN (1) AD- 665 299/XAG

FG (2) 170703

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) EN ROUTE IFR AIR TRAFFIC RELATIONSHIPS FY 1966.

DN (9) Staff study

AU (10) Ashby, Wallace L.
Reynolds, Ellen S.
Warfield, Richard M.

RD (11) Nov 1967

PG (12) 292 Pages

RS (14) FAA-RD-67-71

PJ (16) 197-641-01R

RC (20) Unclassified report

DE (23) (*AIR TRAFFIC, REVIEWS), (*INSTRUMENT FLIGHT, AIR TRAFFIC)

TRANSPORT AIRCRAFT, INSTRUMENT FLIGHT, AIR TRAFFIC CONTROL SYSTEMS,

CORRELATION TECHNIQUES, DISTRIBUTION, TABLES(DATA), COMMERCIAL PLANES,

STANDARDS, PERIODIC VARIATIONS

ID (25) instrument flight rules

AB (27) Annual, peak day, peak hour and peak minute en route IFR air traffic relationships in FY1966 are examined by Air Route Traffic Control Center and by aviation category (air carrier, general aviation, military). Distributions of Friday activity throughout CY1966 are developed, as are distributions of minute-by-minute activity during a peak hour. En route IFR flight activity in 1966 is compared with that in 1959. Listings of all flights active within each Center's area during its peak three-hour periods in FY1966 are included for use in current studies and to provide historical benchmarks for future system effectiveness studies. (Author)

AN (1) AD- 668 336/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SYSTEMS

TI (6) SCHEDULED AIR CARRIER FLIGHT ACTIVITY IN THE UNITED STATES, MAY 1967.

DN (9) Interim rept.

RD (11) Nov 1967

PG (12) 24 Pages

RC (20) Unclassified report

DE (23) (*air traffic, scheduling), (*civil aviation, statistical data) commercial planes, transport aircraft, united states, flight, jet transport planes, helicopters, tables(data)

ID (25) air taxi operations

AB (27) The report compares the scheduled flight activity of commercial air carriers in the United States during May 1967 with that of May 1965. Total scheduled air carrier flights for May 1967 increased 45 percent over the scheduled flights for May 1965. Jet air carrier service more than doubled with an increase of 223 percent, while the number of flights by turboprop aircraft increased by 195 percent. Flights by piston aircraft decreased during the same period by 21 percent. Air taxi and Intrastate scheduled service increased tremendously during the two-year period. A direct comparison (May 1967 with May 1965) by air carriers in this category of service is not feasible since some of those reporting in May 1965 have been dissolved or have assumed a new name, and many more have come into operation since May 1965. There were approximately 20 scheduled air carriers operating air taxi and intrastate service in May 1965, while 64 were listed in the May 1967 Official Airline Guide. Scheduled Friday flights increased from 347 in May 1965 to 1761 in May 1967. These 1761 flights represent 10.4 percent of all scheduled flights. Scheduled air carriers (excluding air taxi and intrastate) increased from 56 in May 1965 to 82 in May 1967. Of these, foreign air carriers accounted for 24 in May 1965 and 49 in May 1967. Of the 49 foreign carriers, 14 were Canadian based and 6 were based in Mexico. (Author)

AN (1) AD- 663 123/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA AERONAUTICAL CENTER

TI (6) AN INVESTIGATION AND DEVELOPMENT OF AN RBDE-4 QUICK RECOVERY MODIFICATION.

DN (9) Final rept.

AU (10) Shirley, James M.

RD (11) Oct 1967

PG (12) 23 Pages

PJ (16) FAA-130-326-96A

RN (18) FAA-RD-67-63

RC (20) Unclassified report

DE (23) (*RADAR EQUIPMENT, PERFORMANCE(ENGINEERING)), (*DISPLAY SYSTEMS, RADAR

EQUIPMENT), (*AIR TRAFFIC CONTROL SYSTEMS, RADAR EQUIPMENT) RECOVERY, CIRCUITS, SCANNING, TIME, POWER SUPPLIES

AB (27) The objective of the investigation was to determine if it is feasible to significantly improve the recovery time of the RBDE-4 system after

it has gone through an interruption of primary power. Tests made on two RBDE-4 systems showed they were left inoperable for approximately 2.5 minutes, even though the interruption of primary power lasted only a few seconds. Further tests and investigations provided a quick recovery modification to the RBDE-4 scan converter. This modification returns the RBDE-4 system to normal approximately 120 seconds earlier than without the modification. Since primary power failures often occur at a time when air traffic controllers most need the radar information, a return to normal 120 seconds earlier is considered a significant improvement in recovery time. (Author)

AN (1) AD- 663 688/XAG

FG (2) 050900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) AIRCRAFT ACCIDENTS BY OLDER PERSONS

AU (10) Mohler, Stanley R.

Bedell, Rowland H. S.

Ross, Alan

Veregge, Everett J.

RD (11) Oct 1967

PG (12) 8 Pages

RS (14) FAA-AM-67-22

RC (20) Unclassified report

DE (23) (*aviation accidents, *aging(physiology))

pilots, statistical analysis, aviation safety, aviation medicine, medical examination

AB (27) During 1965 there were 450,494 certificated general aviation pilots in the United States, of which 9,826 were over sixty years old. Within this group there were 108 accidents, 17 of which were fatal.

Statistical analysis (chi square) revealed that these older pilots were essentially as safe as their younger colleagues. Analyses of accidents by airman certificate and age groups are given. (Author)

AN (1) AD- 667 604/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT

SERVICES

TI (6) ENROUTE IFR AIR TRAFFIC SURVEY: PEAK DAY FISCAL YEAR 1966

AU (10) Veregge, Everett J.

RD (11) Sep 1967

PG (12) 200 Pages

RC (20) Unclassified report

DE (23) (*air traffic, reviews), (*instrument flight, air traffic)

commercial planes, jet transport planes, civil aviation, air traffic control systems, helicopters, statistical data, flight paths, takeoff, instrument landings, scheduling

ID (25) ifr(instrument flight rules), instrument flight rules

AB (27) The report summarizes and analyzes fiscal year 1966 peak day data for each center and each terminal facility reporting IFR departures. The data show altitudes and departure times by user and type of aircraft.

Also provided are pairs of communities with 10 or more flights between them, and the number of such flights. (Author)

AN (1) AD- 686 383/XAG

FG (2) 170703

170900

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) COST-EFFECTIVENESS ANALYSIS OF THE AUTOMATION OF AIR TRAFFIC CONTROL

FUNCTIONS AT RADAR TERMINALS. COST-BENEFITS OF TRACON C.

DN (9) Interim rept.

RD (11) Sep 1967

PG (12) 33 Pages

RC (20) Unclassified report

DE (23) (*air traffic control systems, cost effectiveness)

automation, radar tracking, radar beacons, display systems, effectiveness

ID (25) terminal radar control, tracon(terminal radar control)

AB (27) The report analyzes the effects of automating a selected number of radar terminals with alphanumeric beacon-tracking capability. These terminals consist of 6 'Giant' size terminals, 24 'Large' size terminals and 32 'Medium' size terminals. Although they fall within the defined 'Giant' size category, Atlanta is excluded because it already has the ARTS automation, and the New York complex (JFK, LGA and EWR) is excluded because automation is currently programmed via the common IFR room. (Author)

AN (1) AD- 658 514/XAG

FG (2) 170703

250300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) COST/BENEFIT ANALYSIS OF TELEVISED RADAR FOR GENERAL AVIATION.

DN (9) Final rept.

AU (10) Erickson, Juel E.

RD (11) Aug 1967

PG (12) 42 Pages

RS (14) FAA-RD-67-54

PJ (16) FAA-197-641-01R

RC (20) Unclassified report

DE (23) (*RADAR NAVIGATION, TELEVISION SYSTEMS), (*AVIATION SAFETY, RADAR NAVIGATION)

AIRBORNE, COSTS, RADAR EQUIPMENT, FEASIBILITY STUDIES, AIRPORT RADAR

SYSTEMS, METEOROLOGICAL RADAR, AIR TRAFFIC CONTROL SYSTEMS

AB (27) An economic evaluation of the costs and potential benefits of broadcasting radar information to general aviation aircraft via TV relay was performed. Benefits were equated to costs of general aviation accidents that might be prevented by broadcasting weather data, area route information or positions of other aircraft. Over 90 percent of general aviation accidents which might be prevented by the use of TV radar indicate weather as the primary benefit area. Therefore it was determined that the most promising area for improvement is in properly presenting weather data. It was determined that benefits of TV radar would exceed costs if at least 50 percent of all general aviation aircraft installed equipment and also that at least 50 percent of general aviation accident costs would be eliminated as a result. However, due to the probability of too few participating general aviation aircraft, the study concludes that no justification exists for pursuing the TV radar concept further at this time. Future improvements in radar, transmission capability, frequency availability and availability of suitable equipment for general aviation aircraft may indicate a need for further reassessment at that time. (Author)

AN (1) AD- 684 811/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) AVIATION DEMAND AND AIRPORT FACILITY REQUIREMENT FORECASTS FOR LARGE

AIR TRANSPORTATION HUBS THROUGH 1980.

RD (11) Aug 1967

PG (12) 156 Pages

RC (20) Unclassified report

DE (23) (*airports, management planning and control)

air transportation, design, urban areas, operation, air traffic, cargo, statistical data, classification, geography, distribution, predictions

ID (25) airport requirement forecasts

AB (27) The report presents forecasts of long-range airport aviation demand and selected airport facility requirements at the Nation's large air transportation hubs as developed by the FAA's Airports Service. The forecasts are designed for use in advance planning of the physical, as well as financial, airport facility development required to meet the air transportation needs of 1980. They are also intended to assist in promoting the development of comprehensive, long-range metropolitan airport master plans by airport and local government planning officials. (Author)

AN (1) AD- 728 910/XAG

FG (2) 010600

050100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT

SERVICES

TI (6) Feasibility of Measuring Federal Aviation Administration Productivity

AU (10) Moundalexis, John

Kovalick, Peter N.

RD (11) Jun 1967

PG (12) 109 Pages

RC (20) Unclassified report

DE (23) (*civil aviation, management planning), (*organizations, effectiveness) united states government, feasibility studies, measurement, statistical data, aviation safety, air transportation, systems engineering

ID (25) productivity

AB (27) The document is concerned with developing techniques for effective measurement of productivity within the Federal Aviation Administration; applying these techniques to actual operating situations within the agency, and relating productivity to existing agency programs.

AN (1) AD- 819 179/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) ANALYSIS OF RUNWAY SLUSH MEASURING TECHNIQUES.

DN (9) Final rept.
AU (10) Boris, Murray S.
RD (11) Jun 1967
PG (12) 17 Pages
RS (14) FAA-RD-67-23
PJ (16) FAA-450-403-01E
RC (20) Unclassified report
AL (22) Distribution: USGO: others to Federal Aviation Administration, Attn: Systems Research and Development Service, Washington, D. C. 20590.
DE (23) (*runways, *atmospheric precipitation)
water, ice, snow, state-of-the-art reviews, rain, drag, friction, measurement, safety, density, costs, maintenance, moisture, hygrometers, skidding
ID (25) slush
DL (33) 13

AN (1) AD- 657 330/XAG

**FG (2) 010301
010307**

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) ECONOMIC AND TECHNICAL FEASIBILITY ANALYSIS OF ESTABLISHING AN ALL-WEATHER V/STOL TRANSPORTATION SYSTEM.

DN (9) Master's thesis
AU (10) Del Balzo, Joseph M.
RD (11) May 1967
PG (12) 141 Pages
RS (14) FAA-RD-67-36
RC (20) Unclassified report
NO (21) Prepared in cooperation with Drexel Inst. of Tech., Philadelphia, Pa.
DE (23) (*HELICOPTERS, ALL WEATHER AVIATION), (*AIR TRANSPORTATION, FEASIBILITY STUDIES)
ECONOMICS, NAVIGATION, SHORT TAKEOFF AIRCRAFT, AIR TRAFFIC, AIRPORTS, COSTS
AB (27) The need and potential of an aircraft having vertical and/or short take off and landing capability (V/STOL) is considered. The technical and economic feasibility of establishing an all weather V/STOL transportation system is explored. Traffic forecasts for the V/STOL for the years 1968 through 1980 are postulated. The enroute, terminal,

and approach and landing navigation system requirements for the V/STOL are analyzed. Anticipated operating costs and revenue, based on an analysis of the New York-Boston air shuttle route, are presented.
(Author)

AN (1) AD- 673 260/XAG

FG (2) 010600

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C INFORMATION AND STATISTICS DIV

TI (6) SCHEDULED INTERNATIONAL AIR CARRIER FLIGHT ACTIVITY DURING MAY 1967.

RD (11) May 1967
PG (12) 19 Pages
RC (20) Unclassified report
DE (23) (*air traffic, scheduling), (*civil aviation, statistical data)
commercial planes, flight, transport aircraft, flight paths, tables(data)
AB (27) This is the first attempt at a report on scheduled international flight activity. The number of scheduled air carrier flights fluctuates slightly with the day of the week reaching its peak on Friday and its low point on Sunday. Since interest is often centered on peak traffic rather than average traffic load, the report is presented in terms of Friday's scheduled traffic. Rough approximations for other days of the week can be made using the percentages indicated. Exact information with regard to day-of-the-week activity is available from the basic data source if required. (Author)

AN (1) AD- 652 313/XAG

FG (2) 010300

050100

050300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF SUPERSONIC

TRANSPORT DEVELOPMENT

TI (6) ECONOMIC FEASIBILITY REPORT, UNITED STATES SUPERSONIC TRANSPORT.

RD (11) Apr 1967
PG (12) 228 Pages
RC (20) Unclassified report
DE (23) (*supersonic aircraft, *costs), (*aircraft industry, economics)
feasibility studies, decision making, commerce, industrial production, air transportation, airports, air traffic, management engineering,

money

AB (27) During the next two or three decades when the SST will be flown by the Free World's airlines, effective competition can be expected from improved subsonic airplanes as well as from the French/British Concorde. Even so, the study concludes that the market for the SST should be at least 500 airplanes; it should earn for the airlines and manufacturers a profit consistent with their risks; and the Government should recover its investment plus interest.

AN (1) AD- 652 371/XAG

FG (2) 010306

050600

140200

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIRCRAFT DEVELOPMENT

SERVICE

TI (6) EXPERIMENTAL ASSESSMENT OF GROUND TRAINERS IN GENERAL AVIATION PILOT

TRAINING.

DN (9) Final rept.

AU (10) Crook,Warren G.

RD (11) Apr 1967

PG (12) 36 Pages

RS (14) FAA-ADS-67-5

PJ (16) FAA-560-004-02X

RC (20) Unclassified report

DE (23) (*FLIGHT SIMULATORS, PILOTS), (*PILOTS, *TRAINING), (*TRAINING DEVICES, PILOTS)

AIRCRAFT, TRAINING PLANES, STANDARDS, EFFECTIVENESS, TIME,

STUDENTS,

TABLES(DATA)

AB (27) An evaluation was conducted to compare the effectiveness of different types of ground trainers when used in the private pilot flight training program. One objective was to determine standards for identifying ground trainers in which instruction would be acceptable toward pilot certification requirements. A second objective was to determine how much time in a trainer might be substituted for actual flight time. No specified design or operational standards for ground trainers is recommended. Results showed that average total airplane time to reach private pilot proficiency was reduced by 16%. A 15% substitution of trainer time for airplane instruction time is recommended in the approved 35-hour primary flight curriculum requirements. (Author)

AN (1) AD- 667 732/XAG

FG (2) 150500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SERVICES

TI (6) MILITARY AIR TRAFFIC ACTIVITY REPORT: CALENDAR YEAR 1966

AU (10) Patterson,Viola W.

RD (11) Apr 1967

PG (12) 55 Pages

RS (14) FAA-MS-67-6

RC (20) Unclassified report

DE (23) (*air traffic, *military transportation)

reviews, landing fields, instrument flight, approach, military

facilities, statistical data, landing aids

ID (25) vfr(visual flight rules), visual flight rules

AB (27) This report summarizes and analyzes calendar year 1966 air traffic activity reported by U. S. Air Force Bases, Army Airfields, and Naval Aeronautical Facilities in the conterminous United States and Overseas. In addition, data on Naval instrument operations, VFR operations, and instrument approaches are also presented. (Author)

AN (1) AD- 661 840/XAG

FG (2) 010305

200100

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) THE SUPERSONIC TRANSPORT: THE SONIC BOOM AND YOU

AU (10) Powers,John O.

Power,Kenneth

RD (11) 1967

PG (12) 40 Pages

RC (20) Unclassified report

DE (23) (*supersonic aircraft, sonic boom), (*transport aircraft, sonic boom), (*sonic boom, reviews)
economics, flight testing, design, structures, stress(physiology), stress(psychology)

ID (25) supersonic transports

AB (27) An attempt was made to outline the historical development of the United States supersonic transport development program and to place in proper perspective the national significance of the SST program. The technological aspects and problems of the sonic boom were reviewed. The actual overflight sonic boom programs to date were reviewed and capsule results were discussed. (Author)

AN (1) AD- 664 386/XAG
FG (2) 010309
010500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA
AERONAUTICAL CENTER
TI (6) FAA DEVELOPMENTS RELATIVE TO DESIGN OF NEW AIRCRAFT SYSTEMS
AU (10) Waterman,H. E.
RD (11) 1967
PG (12) 4 Pages
RC (20) Unclassified report
NO (21) Presented at FAA Maintenance Symposium 'Maintainability and Reliability
of Aircraft Systems', Oklahoma City, Okla. 7-9 Nov 1967.
DE (23) (*commercial planes, design)
symposia, specifications, reliability, maintainability, united states
government, cost effectiveness, analysis, failure(mechanics), monitors,
systems engineering, data processing
ID (25) airworthiness
AB (27) The principal FAA developments relative to new aircraft systems are
certification techniques for unique requirements, methods of
evaluation, reliability analysis, and recognition of the importance of
designed-in maintainability to continuing airworthiness and conditional
reliability for the life of the system. (Author)

AN (1) AD- 664 387/XAG
FG (2) 010309
010500
CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OKLA
AERONAUTICAL CENTER
TI (6) DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION,
PHILOSOPHY ON EVALUATION OF MAINTENANCE PROGRAMS FOR NEW
AIRCRAFT
AU (10) Corso,S. J.
RD (11) 1967
PG (12) 16 Pages
RC (20) Unclassified report
NO (21) Presented at FAA Maintenance Symposium 'Maintainability and Reliability
of Aircraft Systems', Oklahoma City, Okla. 7-9 Nov 1967.
DE (23) (*commercial planes, maintenance), (*supersonic aircraft, maintenance),
(*transport aircraft, maintenance)
specifications, aircraft engines, effectiveness, philosophy,
acceptability, design, failure(mechanics), air transportation, failure,

test equipment, spare parts, test methods, industrial training
ID (25) federal aviation administration, supersonic transports
AB (27) The outline of philosophy on the maintenance of new airplanes is an
attempt to gather together all those currently known elements involving
maintenance as a basis for providing reasonable assurance that the
airplane can be maintained in the highest possible condition for safe
operation. A separate paper entitled 'Federal Aviation Administration
philosophy on evaluation of proposed maintenance programs for new large
turbine and supersonic transport aircraft' is included.

AN (1) AD- 672 036/XAG
FG (2) 010305
131200
210400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) CONFERENCE ON FIRE SAFETY MEASURES FOR AIRCRAFT FUEL SYSTEMS:
REPORT OF
CONFERENCE, DECEMBER 11-12, 1967.
RD (11) 1967
PG (12) 164 Pages
RC (20) Unclassified report
DE (23) (*fuel systems, *fire safety), (*aviation fuels, fire safety)
aviation safety, transport aircraft, aircraft fires, ignition, static
dischargers, fuel tanks, aircraft industry, symposia
AB (27) Aircraft fuels, by reason of the requirement for burning properly in
the propulsion units, presents some inherent hazards when handled,
stored, and transported through the fuel system. Current safety
standards and industry practices are cognizant of these hazards and
include specific safeguards against them. Nevertheless, accidents have
occurred involving fuel systems. The FAA believes it is timely to
consider the feasibility and justification for possible improvements in
protective means. The conference provided a needed review and
discussion of this subject. It was clear that there was no
disagreement with the desirability of eliminating hazards arising from
the existence of ignitable fuel/air mixtures within a fuel system.
However, discussion of possible protective systems revealed extensive
differences of opinion about the feasibility and justification for
adopting specific means. (Author)

AN (1) AD- 687 153/XAG
FG (2) 010500
050300

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
PLANNING DIV**

TI (6) THE AIRPORT--ITS INFLUENCE ON THE COMMUNITY ECONOMY.

RD (11) 1967

PG (12) 87 Pages

RC (20) Unclassified report

DE (23) (*airports, *economics)

civil aviation, commerce, industries, employment, air transportation

ID (25) general aviation aircraft

AB (27) The purpose of this survey is to determine what economic benefits to representative communities have accrued from the development of airports built primarily for use by general aviation with financial assistance under the Federal-aid Airport Program. In this respect, the survey sought tangible evidence of significant community benefit which could be causally related to each airport's development. (Author)

AN (1) AD- 640 014/XAG

FG (2) 100200

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS
RESEARCH AND**

DEVELOPMENT SERVICE

TI (6) MODULAR SOLID STATE UNINTERRUPTIBLE POWER SYSTEM.

DN (9) Final rept.

AU (10) Kusko, Alexander

RD (11) Sep 1966

PG (12) 49 Pages

PJ (16) 450-101-05E,

RN (18) SRDS-RD-66-61

RC (20) Unclassified report

DE (23) (*POWER EQUIPMENT, SOLID STATE PHYSICS), (*MODULES(ELECTRONICS)
POWER EQUIPMENT), RECTIFIERS, BATTERY COMPONENTS, ELECTRIC

BATTERIES,

INVERTER CIRCUITS, CIRCUITS, RELIABILITY(ELECTRONICS), REDUNDANT
COMPONENTS, SILICON CONTROLLED RECTIFIERS, FAILURE(ELECTRONICS),
SEMICONDUCTOR DEVICES, TRANSIENTS

AB (27) This report shows that the requirements for a Modular Solid State Uninterruptible Power System (UPS), as described in Specification FAA-ER-450-012, can be met using solid-state-circuit and inverter techniques available today. Each module will consist of a rectifier-battery-inverter assembly capable of operating from either commercial power, standby engine generators or internal battery power, and delivering continuous, uninterruptible, regulated, three-phase a-c power to its load. The UPS must be designed so that each module of a

typical four-module system will have an MTBF of the order of 1100 hours and an MTTR of one hour to meet the system MTBF requirement of 100,000 hours. The UPS must also be designed so that the output voltage during all switching and fault clearing operations falls within a voltage-time envelope which the electronic load equipment can tolerate. (Author)

AN (1) AD- 687 410/XAG

FG (2) 010600

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION**

MEDICINE

TI (6) EMERGENCY EVACUATION TESTS OF A CRASHED L-1649

AU (10) Garner, J. D.

Blethrow, John G.

RD (11) Aug 1966

PG (12) 44 Pages

RS (14) FAA-AM-66-42

RC (20) Unclassified report

NO (21) Supersedes AD-645 423.

DE (23) (*aviation accidents, evacuation)

civil aviation, transport aircraft, simulation, reaction(psychology),
test methods, recording systems, illumination, debris, crash injuries,
smoke, visibility, rescues, aerospace systems, escape systems,
questionnaires

ID (25) crash tests, c-121 aircraft, emergency planning, evaluation

AB (27) Four basic evacuation tests were performed on a crashed L-1649 in Phoenix, Arizona, to document problem areas, passenger reaction, emergency lighting, slope of flooring and other items affecting passenger egress. Two day and two night tests were run with different crews and passengers for each. The tests were designed to observe the reactions of the crews and passengers under different emergency conditions rather than to compare the results of one test with another. Data were collected by tape recordings, motion picture film, and questionnaires. Observations were recorded. The results are presented in the report. (Author)

AN (1) AD- 696 587/XAG

FG (2) 010500

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND**

DEVELOPMENT SERVICE

TI (6) STUDY OF AIRPORT SURFACE TRAFFIC MOVEMENT PROBLEMS.

DN (9) Memorandum rept.
AU (10) Dowe,Edward J.
RD (11) Jun 1966
PG (12) 87 Pages
PJ (16) FAA-430-003-01R
RC (20) Unclassified report
DE (23) (*CIVIL AVIATION, TERMINAL FLIGHT FACILITIES), (*TERMINAL FLIGHT FACILITIES, *TRAFFIC)
TAXIING, VEHICLES, GROUND SUPPORT EQUIPMENT, CONTROL,
MATHEMATICAL
MODELS
ID (25) *AIRPORT SURFACE TRAFFIC
AB (27) A study was made of the problems associated with the movement of aircraft and ground vehicles on the surface of the airport between the runway complex and the terminal building area. A description of the control process in both the taxiway and terminal subsystems is provided. Identification of factors pertaining to airport surface traffic movements was made, and a plan for simulation of ground traffic is furnished to determine the quantitative effects on delay by each primary factor. Several problem areas are discussed and a bibliography is included. (Author)

AN (1) AD- 676 082/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND
DEVELOPMENT SERVICE
TI (6) AN ANALYSIS OF A PROCEDURE FOR CONDUCTING INSTRUMENT APPROACHES TO
PARALLEL RUNWAYS SPACED LESS THAN 5,000 FEET APART.

DN (9) Final rept.
AU (10) Faison,Walter E.
RD (11) May 1966
PG (12) 32 Pages
RS (14) FAA-RD-66-35
RC (20) Unclassified report
DE (23) (*air traffic control systems, approach), (*approach, *instrument flight)
feasibility studies, runways, aviation safety, mathematical models, mathematical analysis, flight paths, separation
AB (27) The report describes a feasibility analysis of a proposed procedure for conducting instrument approaches to parallel runways spaced less than 5,000 feet apart. A mathematical model which relates collision risk,

size of aircraft, relative velocity, nominal separation and flight path variability is used to estimate longitudinal separation minima for various runway spacings less than 5,000 feet apart. Representative estimated values are: 4,000 feet runway spacing - 9,600 feet minimum longitudinal separation between aircraft on approach to adjacent runways; 2,700 feet runway spacing - 14,500 feet minimum longitudinal separation between aircraft on approach to adjacent runways. Some time relationships in the resolution of extreme deviation situations are also examined. Turning an avoiding aircraft from an intersecting course with an intruding aircraft can increase the potential hazard or risk. Considering the separations specified and the assumed times used for detection, clearance delivery, etc., it appeared better, in some cases examined, to allow both of the aircraft to proceed on course without any intervention. More extensive study of deviation situations which include measures of pilot, controller, and equipment complex performance is needed. (Author)

AN (1) AD- 667 734/XAG
FG (2) 010600
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF MANAGEMENT SERVICES
TI (6) AIR TRAFFIC PATTERNS FOR IFR AND VFR AVIATION, CALENDAR YEAR 1966.
RD (11) 1966
PG (12) 163 Pages
RC (20) Unclassified report
DE (23) (*air traffic, reviews)
air traffic control systems, air traffic control terminal areas, transport aircraft, commercial planes, civil aviation, instrument flight, flight paths, air transportation, scheduling, statistical data
ID (25) ifr(instrument flight rules), instrument flight rules, vfr(visual flight rules), visual flight rules
AB (27) The publication presents a detailed record of flight plans filed at flight service stations and combined station/towers as collected in a 2-percent random sample of all Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) flight plans filed in the 50 states and the ARTC area of San Juan, Puerto Rico. These data furnish the various Offices and Services of the Federal Aviation Administration with terminal and enroute air traffic activity for use in the planning and management of the air traffic control system. (Author)

AN (1) AD- 654 552/XAG

FG (2) 010300
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIRCRAFT DEVELOPMENT SERVICE
TI (6) DEGRADATION LIMITS OF PLASTIC WINDSHIELDS IN SERVICE.
DN (9) Technical rept.
AU (10) Grom, Richard V.
Marshall, Philip R.
RD (11) Nov 1965
PG (12) 45 Pages
RS (14) FAA-ADS-57
PJ (16) FAA-510-004-03X
RC (20) Unclassified report
DE (23) (*WINDSHIELDS, AIRCRAFT), (*PLASTICS, WINDSHIELDS)
DEGRADATION, OPTICAL PROPERTIES, LIGHT TRANSMISSION, SCATTERING, VISION
AB (27) A study of the optical and strength characteristics of plastic aircraft windshields was conducted to determine practical inspection tests that can be applied to in-service windshields. Portable instruments were developed to measure luminous transmittance and light scattering, and subjective visual tests were conducted to determine the effect of optical degradation on vision. Structural deterioration caused by crazing was also investigated. Project results indicate that further testing of the developmental instruments is desirable, and that additional subjective tests are needed to establish a rejection scale based upon visual performance through degraded windshields. (Author)

AN (1) AD-B208 735/XAG
FG (2) 010200
110900
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC AIRCRAFT DEVELOPMENT SERVICE
TI (6) Degradation Limits of Plastic Windshields In Service.
DN (9) Technical rept.
AU (10) Gram, Richard V.
Marshall, Philip R.
RD (11) Nov 1965
PG (12) 44 Pages
RS (14) FAA-ADS-57
RN (18) XJ-XD
RC (20) Unclassified report
AL (22) Distribution: DTIC users only.

DE (23) *DEGRADATION, *WINDSHIELDS, *PLASTIC PROPERTIES, *VISUAL FLIGHT RULES
TEST AND EVALUATION, PORTABLE EQUIPMENT, LIGHT SCATTERING, OPTICAL PROPERTIES, AIRCRAFT, COCKPITS, STRUCTURAL PROPERTIES, PILOTS, STRENGTH(MECHANICS), LIMITATIONS, SCALE, INSPECTION, INSTRUMENTATION,
VISION, VISUAL PERCEPTION, DETERIORATION, PLASTICS, REJECTION, CRAZING
DL (33) 12

AN (1) AD- 623 303/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) INTERFERENCE TO AIRCRAFT CONDUCTING CATEGORY II INSTRUMENT APPROACHES
BY OTHER AIRCRAFT IN VICINITY OF THE AIRPORT.
DN (9) Technical rept.
AU (10) Proferes, Nicholas J.
Winick, Alexander B.
RD (11) Oct 1965
PG (12) 16 Pages
RS (14) RD-65-107
PJ (16) 320 101 01N
RC (20) Unclassified report
DE (23) (*INSTRUMENT LANDINGS, RADIO INTERFERENCE), (*AIR TRAFFIC CONTROL TERMINAL AREAS, RADIO INTERFERENCE), (*RADIO INTERFERENCE, INSTRUMENT LANDINGS), (*ALL WEATHER AVIATION, INSTRUMENT LANDINGS) NAVIGATIONAL AIDS, RADIO SIGNALS, ELECTROMAGNETIC WAVE REFLECTIONS,
AIRCRAFT ANTENNAS, AIRCRAFT, TAXIING, TAKEOFF
AB (27) Investigations have been made with regard to possible localizer interference to aircraft conducting approaches to Category II minimums (100 feet ceiling - 1/4 mile visibility) by aircraft operating on or about the airport, taking off over the localizer, and aircraft overflying the instrument landing system localizer. (Author)

AN (1) AD- 470 317/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) LOW ACTIVITY AIR TRAFFIC CONTROL TOWER COMMUNICATIONS EQUIPMENT.

DN (9) Final rept.

AU (10) Middlebrook, Don G.

RD (11) Aug 1965

PG (12) 32 Pages

RS (14) RD-65-33

PJ (16) FAA221 110 13C

RC (20) Unclassified report

AL (22) Notice: Release only to U. S. Government Agencies is authorized.

Other certified requesters shall obtain release approval from Systems Research and Development Service, Federal Aviation Agency, Washington, D. C.

DE (23) (*communication and radio systems, air traffic control systems), (*air traffic, communication and radio systems), (*airport control towers, communication and radio systems)

costs, feasibility studies, very high frequency, ultrahigh frequency

DL (33) 13

AN (1) AD- 620 018/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) FEASIBILITY OF RECHARGING FAA IN-SERVICE DRY CELL BATTERIES.

DN (9) Final rept.

AU (10) Corbin, Francis D.

RD (11) Aug 1965

PG (12) 21 Pages

RS (14) RD-65-86

PJ (16) 450 102 06E

RC (20) Unclassified report

DE (23) (*DRY BATTERIES, MAINTENANCE)

FEASIBILITY STUDIES, CARBON, ZINC, MANGANESE COMPOUNDS, DIOXIDES, STORAGE BATTERIES, ECONOMICS, ALKALINE BATTERIES, STORAGE, LIFE EXPECTANCY, MERCURY COMPOUNDS, OXIDES, NICKEL, CADMIUM, SILVER

AB (27) The report explains the feasibility of recharging the presently used carbon-zinc batteries and also considers the use of other types which may have a better charge acceptance. It was found that, although the carbon-zinc battery is listed as being a primary cell, i.e., not rechargeable, it actually has a limited recharge capability provided the charging is done soon after discharge. Since most of our batteries are for emergency use, the loss of capacity is due to self-discharge rather than actual use. Inasmuch as capacity lost by self-discharge

cannot be replaced by charging, it is not recommended that a recharging program for carbon-zinc batteries be undertaken. A number of other types of batteries are better adapted for standby application, such as radiological equipment, and are more rechargeable than the carbon-zinc type. However, except for alkaline manganese dioxide-zinc batteries the cost of these other types is so high that their use cannot be justified on an economic basis. Recommendations are made for the use of secondary manganese dioxide-zinc batteries at some locations.
(Author)

AN (1) AD- 620 019/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) AN ANALYSIS OF ITINERANT AIR TRAFFIC JACKSONVILLE ARTCC, 1970 AND 1975

DN (9) Interim rept.

AU (10) Dunlap, Donald L.

RD (11) Aug 1965

PG (12) 57 Pages

RS (14) RD-65-89

PJ (16) 141 411 01A

RC (20) Unclassified report

DE (23) (*AIR TRAFFIC, FLORIDA), (*AERONAUTICS, AIR TRAFFIC) MATHEMATICAL PREDICTION, AIR TRAFFIC CONTROL SYSTEMS, CIVIL AVIATION,

AIR TRANSPORTATION

AB (27) This report contains forecasts of the 1970 and 1975 itinerant air traffic within the Jacksonville ARTCC control area. The forecasts describe annual, peak day, peak hour of peak day, IFR and VFR traffic. Two possible control area configurations are described. One is the present Jacksonville ARTCC control area; the other is the combined Jacksonville - Miami ARTCC control areas. A plausible configuration of the peak hour traffic is described in terms of abbreviated flight plans which indicate type of aircraft, true air speed, origin, time of entrance into the control area, destination, and route of flight.

AN (1) AD- 620 358/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) RADIO-INTERFERENCE PROBABILITY AND ITS EFFECT ON SITE-SEPARATION

STANDARDS AND FREQUENCY ASSIGNMENT OF VHF AND UHF CHANNELS.

- DN (9) Technical rept.
AU (10) Hoehn, Alfred J.
RD (11) Aug 1965
PG (12) 51 Pages
RS (14) SRDS-RD-65-91
RC (20) Unclassified report
DE (23) (*RADIO INTERFERENCE, PROBABILITY), (*AIR TRAFFIC CONTROL SYSTEMS, RADIO INTERFERENCE)
STANDARDS, VERY HIGH FREQUENCY, ULTRAHIGH FREQUENCY, WAVE PROPAGATION
AB (27) In this report equations are developed which permit computation of the probability that radio interference will occur in ATC communications. It is shown that the probability of simultaneous occurrence of desired and undesired transmissions (utilization probability) is a dominant factor affecting the presence or absence of interference. Utilization probability, in turn, is a function of the duration of ground-based and airborne emissions. Transmitter site separation is now the primary consideration for interference control although utilization and other factors are considered informally. Site separation is shown to provide little air-to-air protection under the derogated standards which must exist in congested areas. The fact that communications have not been seriously affected under these conditions is attributed to the existence of a low utilization probability, for which rough estimates are given. Site separation computations are based on worst-case situations which have a very low probability of occurrence. These separations must be violated in practice. Insufficient statistical information is available concerning the present status or projected failure point of the system.

- AN (1) AD- 654 583/XAG
FG (2) 010400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIRCRAFT DEVELOPMENT SERVICE
TI (6) EVALUATION OF A TAIL LOCATED FLIGHT RECORDER.
DN (9) Technical rept.
AU (10) Rich, Paul M.
RD (11) Aug 1965
PG (12) 25 Pages
RS (14) FAA-ADS-50
PJ (16) FAA-530-003-04X
RC (20) Unclassified report

- DE (23) (*FLIGHT INSTRUMENTS, FLIGHT TESTING)
AIRSPEED INDICATORS, ALTIMETERS, TAILS(AIRCRAFT), ACCELEROMETERS, TRANSDUCERS, CENTER OF GRAVITY
ID (25) EVALUATION
AB (27) The performance of a standard flight recorder, mounted aft of the pressurized bulkhead in the tail section of an air carrier transport aircraft was compared with that of a recorder as presently installed during flight. Two flight recorders and associated accelerometers were mounted in the aircraft; one in the cabin area near the center of gravity and one in the tail of the aircraft outside the pressurized bulkhead. The two recorders were modified to record altitude and airspeed as obtained from an altitude/airspeed transducer located near the pitot-static source. The standard airspeed and altitude channels were supplied by specially installed pitot-static lines running from the nose to the tail of the aircraft. There was no difference between the recordings of the flight recorder located at the c.g. and the recording of an identical recorder located in the tail for the parameters of airspeed, altitude, and heading. However, there was a difference between the acceleration readings of these recorders. Although there was no difference between the altitude and airspeed obtained from the pitot and static lines and the altitude obtained via an altitude/airspeed transducer, the altitude/airspeed transducer proved more practical. (Author)

- AN (1) AD- 618 197/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) SCHEDULED AIR CARRIER FLIGHT ACTIVITY IN THE UNITED STATES, MAY 1965.
DN (9) Interim rept.
AU (10) Reynolds, Ellen S.
RD (11) Jul 1965
PG (12) 23 Pages
RS (14) RD-65-76
PJ (16) 141 411 01A
RC (20) Unclassified report
DE (23) (*COMMERCIAL PLANES, AIR TRAFFIC), (*TRANSPORT AIRCRAFT, AIR TRAFFIC),
(*AIR TRAFFIC, SCHEDULING)
FLIGHT, UNITED STATES, NUMERICAL ANALYSIS
AB (27) In May 1965, community pairs exchanging a total of 100 or more flights were Los Angeles-San Francisco, Boston-New York, and Cleveland-Detroit.

Total scheduled air carrier flights for May 1965 increased slightly more than 5% over November 1964. Total flights by piston and turbo-prop aircraft show a slight decrease over November 1964, while the number of flights by turbo-jet aircraft increased 3%. (Author)

AN (1) AD- 619 725/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) FUTURE SATELLITE COMMUNICATION SUBSYSTEM INVESTIGATION.

DN (9) Interim rept.

AU (10) DeZoute, O. J.

RD (11) Jul 1965

PG (12) 27 Pages

RS (14) RD-65-77

PJ (16) 232 004 02C

RC (20) Unclassified report

DE (23) (*AIR TRAFFIC CONTROL SYSTEMS, COMMUNICATION AND RADIO SYSTEMS),

(*COMMUNICATION SATELLITES(ACTIVE), (*COMMUNICATION SATELLITES(PASSIVE)

AIR TRAFFIC CONTROL SYSTEMS), AIR TRAFFIC CONTROL SYSTEMS), SPACE COMMUNICATIONS, GLOBAL COMMUNICATION SYSTEMS, RADIO RELAY SYSTEMS,

SATELLITES(ARTIFICIAL), SYSTEMS ENGINEERING, RADIO NAVIGATION, FEASIBILITY STUDIES, AERONAUTICS

AB (27) This report contains a review of achievements in the investigation for the over-ocean communication subsystem of the future. The results and conclusions of studies and other activity are summarized and discussed to provide observations that assist in the direction of future activity. It is recognized that implementation of a satellite relay after 1970, while economically reasonable in comparison to competitive subsystems, will require unusual consideration of trade-offs and cost/benefit and complex coordination for even the simplest application. (Author)

AN (1) AD- 620 020/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) FORECASTS OF AIR TRAFFIC ACTIVITY CONUS, 1965-1980.

DN (9) Interim rept.

AU (10) Halle, Marjorie B.

Ashby, Wallace L.

RD (11) Jul 1965

PG (12) 24 Pages

RS (14) RD-65-68

PJ (16) 141 411 01A

RC (20) Unclassified report

DE (23) (*AIR TRAFFIC, UNITED STATES), (*AERONAUTICS, AIR TRAFFIC)

MATHEMATICAL PREDICTION, AIR TRANSPORTATION, AIRCRAFT, NUMBERS, FLIGHT

PATHS, SCHEDULING, CIVIL AVIATION, MILITARY OPERATIONS

AB (27) Projections of active aircraft fleet size in the conterminous 48 United States during the 1965-1980 period have been translated into measures of airspace utilization -- flying hours, flights, operations and distances flown. Those measures are categorized by user class, aircraft type, flight rule and type of flight. (Author)

AN (1) AD- 624 045/XAG

FG (2) 010301

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) AN EVALUATION OF THE HEIGHT VELOCITY DIAGRAM OF A LIGHTWEIGHT, LOW

ROTOR INERTIA, SINGLE ENGINE HELICOPTER.

DN (9) Technical rept.

AU (10) Hanley, William J.

De Vore, Gilbert

RD (11) Jul 1965

PG (12) 59 Pages

PJ (16) FAA-540-006-01X

RN (18) FAA-ADS-46

RC (20) Unclassified report

DE (23) *HELICOPTERS

FLIGHT TESTING, HELICOPTER ROTORS, HELICOPTER ENGINES, WEIGHT, LOADS(FORCES), PERFORMANCE(ENGINEERING), VELOCITY

AB (27) A series of flight tests was conducted at three selected altitudes (sea level, 5000 feet, 7000 feet) to determine the effects of altitude and weight on the height-velocity (H-V) diagram of a small, lightweight, low rotor inertia, medium disk loading, single rotor, single engine helicopter. Two gross weights of the helicopter were used. Quantitative and qualitative test data were collected to determine how the H-V diagram varies with density altitude and aircraft gross weight. An

investigation was made into the effects on the diagram of a delayed collective pitch application response. Results disclosed a family of curves showing that increases in density altitude and/or gross weight enlarged the H-V diagram required for a safe power-off landing. Analysis of the results revealed that the key points (V sub cr, h sub min, and h sub max), which partially define the curves, could be determined by the solution of a set of linear equations. These results were identical to those reported in FAA Technical Report ADS-1 except for the constants of the linear equations and the location of the critical height. The critical height indicated a slight increase as weight, altitude and collective pitch reduction time delay were increased. An average value for the critical height can be selected without upsetting the family of curves. (Author)

AN (1) AD- 617 757/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) CHARACTERISTICS FOR AN AIR TRAFFIC CONTROL RADAR BEACON SYSTEM (ATCRBS)

TRANSPONDER INFLIGHT MONITOR (TIM).

DN (9) Technical rept.

AU (10) Wise, Kenneth

RD (11) Jun 1965

PG (12) 7 Pages

RS (14) RD-65-71

RC (20) Unclassified report

DE (23) (*MONITORS, TRANSPONDERS), (*TRANSPONDERS, AIR TRAFFIC CONTROL SYSTEMS), (*RADAR BEACONS, TRANSPONDERS) AIRBORNE, SPECIFICATIONS

AB (27) The document describes the operation and use of an ATC Transponder In-Flight Monitor and defines its characteristics. Deviation from these characteristics may result in a device that is either useless to the owner or harmful to the Air Traffic Control Radar Beacon System (ATCRBS). A recommendation is made that those characteristics deemed potentially harmful to the ATCRBS, be limited to the specified levels by means of an FAA Selection Order. (Author)

AN (1) AD- 615 953/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) WIRELESS MICROPHONE/HEADSET DEVICE (TELEWALK).

DN (9) Final rept.

AU (10) Morris, Clair R.

RD (11) Apr 1965

PG (12) 28 Pages

RS (14) RD-65-20

PJ (16) 221 140 01C

RC (20) Unclassified report

DE (23) (*EARPHONES, DESIGN), (*COMMUNICATION AND RADIO SYSTEMS, TRANSMITTER

RECEIVERS), (*TRANSMITTER RECEIVERS, COMMUNICATION AND RADIO SYSTEMS)

MICROPHONES, RADIO EQUIPMENT, RADIO RECEIVERS, RADIO TRANSMITTERS,

COSTS, RELIABILITY, AIR TRAFFIC CONTROLLERS

AB (27) The report contains the results of the development and evaluation of a wireless microphone/headset/channel selection device designed to determine the feasibility of replacing the cord-connected headset presently used. These headsets now used by the air traffic controller and coordinator are physically connected by cords to the operating console or position. The cords limit the mobility of the user and interfere with the operation of the control and display equipment. The system developed used very low-powered radio link equipment to provide communication between the controller and his operating position. The results of the development indicate that a wireless system is feasible and desirable for operator comfort and mobility but it is limited in practicability due to cost and marginal reliability. The development was discontinued due to the fact that the requirement for operator mobility has been decreased in the new concept of air traffic control. Recommendations are made to continue efforts to improve the presently used cordconnected headset and operating position. (Author)

AN (1) AD- 617 090/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) AVIATION MEDICINE TRANSLATIONS: ANNOTATED BIBLIOGRAPHY OF RECENTLY

TRANSLATED MATERIAL. III.

AU (10) Allen, Mary Ellen

collins, William E.

Tobias, Jerry V.

Crain, Ruth Ann

RD (11) Apr 1965
PG (12) 19 Pages
RS (14) AM-65-17
RN (18) TT-65-62526
RC (20) Unclassified report
DE (23) (*BIBLIOGRAPHIES, AVIATION MEDICINE), (*AVIATION MEDICINE, BIBLIOGRAPHIES)
MEDICAL RESEARCH, VISION, VESTIBULAR APPARATUS, PHYSIOLOGY, RHYTHM(BIOLOGY), ADAPTATION(PHYSIOLOGY), STRESS(PHYSIOLOGY), FATIGUE(PHYSIOLOGY), HYPOXIA, DECOMPRESSION SICKNESS, PILOTS, NIGHT
FLIGHT, NEUROSES, DIABETES
AB (27) An annotated bibliography of translations of foreign language research articles is presented. The 26 listed entries are concerned with studies of aviation medicine, periodicity, optokinetic nystagmus, vision, vestibular function, and physical science. Procedures for obtaining copies of the translations are included. (Author)

AN (1) AD- 618 422/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) FAA HIGH GAIN AIR/GROUND/AIR VHF/UHF TROPOSCATTER SYSTEM.

DN (9) Interim rept.
AU (10) Grann, Oscar T.
RD (11) Apr 1965
PG (12) 48 Pages
RS (14) RD-65-40
PJ (16) 221 120 01C
RC (20) Unclassified report
DE (23) (*COMMUNICATION AND RADIO SYSTEMS, AIR TRAFFIC CONTROL SYSTEMS),
(*RADIO TRANSMISSION, TROPOSPHERE)
PROPAGATION, GAIN, VERY HIGH FREQUENCY, ULTRAHIGH FREQUENCY, AIRBORNE,
SCATTERING, REFRACTIVE INDEX, ATTENUATION, RADIO EQUIPMENT, DIPOLE ANTENNAS, ANTENNA RADIATION PATTERNS, RELIABILITY(ELECTRONICS)
ID (25) *Ground to air communications, *Tropospheric scatter communication
AB (27) This report contains a brief history of experimentation and development effort conducted by the FAA and others in air/ground/air troposcatter communications systems and information as to the Systems Research and Development Service future program plans in this area. This report also contains a description of the FAA high gain system hardware with

siting information necessary for proper operation. A method for approximating the reliable communications ranges to be achieved from these facilities is also included. (Author)

AN (1) AD- 620 021/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) SURVIVAL OF HIGH-VELOCITY FREE-FALLS IN WATER

AU (10) Snyder, Richard G.
RD (11) Apr 1965
PG (12) 15 Pages
RS (14) AM-65-12
RC (20) Unclassified report
DE (23) (*WATER ENTRY, TOLERANCES(PHYSIOLOGY)), (*WOUNDS AND INJURIES, SHOCK(PATHOLOGY))
SURVIVAL(PERSONNEL), VELOCITY, DRAG, DECELERATION, ASTRONAUTS, AVIATION
INJURIES, AVIATION MEDICINE
AB (27) Forty-four cases of free-falls survived by individuals impacting water environments under conditions of high velocity (50 to 116 ft/sec, corrected for aerodynamic drag) have been intensively investigated and analyzed. Ages varied from 7 to 80 years and the study included 34 males and 10 females. The falls occurred in 17 states, mainly over a 3-year period, and included all known survivals of water impact at over 50 ft/sec. It was found that the most survivable body orientation, by a factor of five to seven, is a feet-first impact in which critical velocity for human survival was approximately 100 ft/sec. No correlation of velocity with degree of injury was found, although distinct patterns of injury were shown. Factors believed to influence human survival tolerances are discussed. (Author)

AN (1) AD- 460 525/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) NAS EN ROUTE RADAR DATA PROCESSING AND DISPLAY CONFIGURATION

AU (10) Blake, Neal
RD (11) Mar 1965
PG (12) 7 Pages
RS (14) 2
RC (20) Unclassified report

AL (22) Notice: Release only to U. S. Government Agencies is authorized. Other certified request-ers shall obtain release approval from Informa-tion Retrieval Branch, Hq-630, Library Services Division, Office of Hqs. Operations, Federal Aviation Agency, Washington, D. C. 20553.

DE (23) (*aeronautics, radar equipment)
data processing, display systems, radar navigation, data transmission systems, air traffic control systems, navigation computers

DL (33) 13

AN (1) AD- 460 546/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) ASSISTANCE TO THE AIR DEFENSE MISSION IN THE FUTURE NAS ARTCCS

AU (10) Bagstad, Charles W.
Webster, Arthur L.

RD (11) Mar 1965

PG (12) 5 Pages

RS (14) 6

RC (20) Unclassified report

AL (22) Notice: Release only to U. S. Government Agencies is authorized. Other certified requesters shall obtain release approval from Information Retrieval Branch, Hq-630, Library Services Div., Office of Hqs. Operations, Federal Aviation Agency, Washington, D. C. 20553, Availability: Document partially illegible.

DE (23) (*AIR TRAFFIC CONTROL SYSTEMS, MANAGEMENT PLANNING AND CONTROL),

(*ANTI-AIRCRAFT DEFENSE SYSTEMS, OPERATIONS RESEARCH)

AIR CONTROL CENTERS, AIR DEFENSE COMMAND, RADAR TARGETS, SEARCH

RADAR,

RADAR TRACKING, EARLY WARNING SYSTEMS, SYSTEMS ENGINEERING,

DESIGN

DL (33) 13

23

AN (1) AD- 461 777/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) VOR SYSTEM ACCURACY

AU (10) Winick, Alexander B.

RD (11) Mar 1965

PG (12) 7 Pages

RS (14) 7

RC (20) Unclassified report

AL (22) Notice: Release only to U. S. Government Agencies is authorized. Other certified re-questers shall obtain release approval from Information Retrieval Branch, Federal Aviation Agency, Washington, D. C. 20553. Attn: HQ-630.

DE (23) (*air traffic control systems, radio navigation)

direction finding, errors, cost, operation, design, systems

engineering, radio stations

ID (25) tacan, vor, vortac

DL (33) 13

AN (1) AD- 613 367/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) THE NATIONAL AIRSPACE SYSTEM 1965: MAJOR FACILITIES; FUNCTIONS; MAINTENANCE COSTS.

DN (9) Interim rept.

RD (11) Mar 1965

PG (12) 249 Pages

RS (14) RD-65-25

PJ (16) 142 421 01A

RC (20) Unclassified report

DE (23) (*TERMINAL FLIGHT FACILITIES, UNITED STATES)

ULTRAHIGH FREQUENCY, VERY HIGH FREQUENCY, LOW FREQUENCY,

MICROWAVE

FREQUENCY, INSTRUMENT LANDINGS, APPROACH LIGHTS, BEACONS,

LANDING

FIELDS, AIR TRAFFIC CONTROL SYSTEMS, TOWERS, RADAR STATIONS,

HOUSING(DWELLINGS), COSTS, MAINTENANCE

AB (27) Contents (largely systems and facilities): 100 Air navigation facilities UHF/VHF 150 Air navigation facilities L/MF 200 Instrument land systems 300 Approach light systems 400/420 Light beacons and fields 500 Air route traffic control centers and associated facilities 550 Long-range surveillance radar facilities 600 Air traffic control tower facilities 650 Terminal area radar facilities 670 Military approach control facilities 700 Flight service stations and associated facilities 800 International flight service stations and associated facilities 900 Secondary facilities -housing, utilities and miscellaneous Equipments used for facility class determination Computation of maintenance costs.

AN (1) AD- 614 443/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) COMPARISON OF TWO VHF COMMUNICATION FREQUENCY ASSIGNMENT METHODS

AU (10) Pyle, John B.
Astholz, Paul T.

RD (11) Mar 1965

PG (12) 29 Pages

RS (14) RD-65-21

RC (20) Unclassified report

NO (21) Available copy will not permit fully legible reproduction. Reproduction will be made if requested by users of DDC. Copy is not available for public sale.

DE (23) (*air traffic control systems, very high frequency), (*very high frequency, air traffic control systems) geography, navigation charts, digital computers, radio interference

ID (25) frequency allocation

AB (27) Comparison of present Geographical Multi-Chart and proposed Matrix Methods was conducted using a sample problem area. In manual operation, the proposed method offered no major advantages over the present method. However, the Matrix Method is promising when used in conjunction with a digital computer if the use of a computer can be justified from a cost/benefit viewpoint. (Author)

AN (1) AD- 620 022/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE

TI (6) FATIGUE IN AVIATION ACTIVITIES

AU (10) MOHLER, Stanley R.

RD (11) Mar 1965

PG (12) 17 Pages

RS (14) AM-65-13

RC (20) Unclassified report

AL (22) Availability: Document partially illegible.

DE (23) (*FATIGUE(PHYSIOLOGY), (*PILOTS, FATIGUE(PHYSIOLOGY) PILOTS), AVIATION MEDICINE, AVIATION SAFETY, STRESS(PSYCHOLOGY), AGING(PHYSIOLOGY), PERFORMANCE(HUMAN), PERFORMANCE(HUMAN), AVIATION

PERSONNEL

AB (27) The report gives a comprehensive survey of work in the field of aviation fatigue. Both current work still in process and earlier work are surveyed. The nature of fatigue itself is discussed, along with all possible factors that contribute to both physical and mental fatigue. Topics covered include flight-time limitations, indicators of excessive fatigue, new developments related to intercontinental flights and Forest Service flights, and the author's detailed comments and recommendations. (Author)
23

AN (1) AD-A057 828/XAG
FG (2) 180400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C AIRCRAFT DEVELOPMENT SERVICE

TI (6) Experimental Testing of a Scintillation Device Designed to Detect COBALT-60 in Seeded Detonator Caps.

DN (9) Technical rept.

AU (10) Grom, Richard V.

RD (11) Mar 1965

PG (12) 36 Pages

RS (14) FAA-ADS-43

RC (20) Unclassified report

DE (23) *Scintillation counters, *Detectors, *Bombs
Radioactive isotopes, Cobalt, Detonators, Signals, Attenuation, Shielding

ID (25) Cobalt 60, LPN-SRDS-530-002-02X

AB (27) Tests were conducted to determine the operating characteristics, capabilities, and limitations of a nuclear scintillation detection system developed by Catholic University of America for use in conjunction with the detection of Cobalt-60 in seeded explosive detonator caps. Results were generally favorable except for the inability of the device to detect rapidly moving sources and the relative ease with which a source might be shielded from the detector. (Author)

AN (1) AD- 612 291/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) SCHEDULED AIR CARRIER FLIGHT ACTIVITY IN THE UNITED STATES, NOVEMBER 1964.

DN (9) Interim rept.
AU (10) Reynolds, Ellen S.
RD (11) Feb 1965
PG (12) 17 Pages
RS (14) RD-65-16
PJ (16) 141 411 01A
RC (20) Unclassified report
DE (23) (*AIR TRAFFIC, SCHEDULING), (*FLIGHT PATHS, UNITED STATES) AVIATION INDUSTRY, AIRCRAFT, AIR TRANSPORTATION, COMMERCIAL PLANES, PROGRAMMING (COMPUTERS)
ID (25) IBM 7090 COMPUTERS
AB (27) This report describes flight activity scheduled by commercial air carriers in the United States during Nov. 1964. It was prepared from an IBM tape containing records of all flights listed in the November 1-15, 1964 issue of the North American Edition of the Official Airline Guide. Flight activity is described in terms of airline, aircraft type, day of week, hour of day and patterns of flow. (Author)

**AN (1) AD- 612 882/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE**

TI (6) REMOTE CONTROL AIR GROUND FACILITY MONITORING.

DN (9) Final rept.
AU (10) Barkalow, Raymond R.
RD (11) Feb 1965
PG (12) 22 Pages
RS (14) RD-65-19
PJ (16) 113 005
RC (20) Unclassified report
DE (23) (*AIR TRAFFIC CONTROL SYSTEMS, REMOTE CONTROL), (*COMMUNICATION EQUIPMENT, MONITORS) VOICE COMMUNICATIONS, VERY HIGH FREQUENCY, ULTRAHIGH FREQUENCY, TELEPHONE LINES
AB (27) The requirements of a fully effective RCAG monitor are discussed and a description of a Systems Research and Development Service developed monitor meeting these requirements is described. Also described is a simple line monitor which is being provided by the American Telephone and Telegraph Company. A cost benefit analysis shows that over 75% of

the total RCAG outages is attributable to the line and that monitoring only the lines will result in a savings of approximately \$61,000 annually in travel expenses. The analysis also shows that no savings can be effected by monitoring equipment at the RCAG and that to provide an effective RCAG monitor for operational purposes would be economically prohibitive. (Author)

**AN (1) AD- 461 187/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE**

TI (6) RELATIONSHIP OF ENROUTE/TERMINAL AREA AIR TRAFFIC CONTROL SUBSYSTEMS

AU (10) Brown, Albert
RD (11) Jan 1965
PG (12) 5 Pages
RS (14) 3
RC (20) Unclassified report
AL (22) Notice: Release only to U. S. Government Agencies is authorized. Other certified requesters shall obtain release approval from Chief, Information Retrieval Branch, Hq.-630, Library Services Div., Office of Headquarters Operations, Federal Aviation Agency, Washington, D. C. 20553.
DE (23) (*air traffic control systems, analysis) reviews
DL (33) 13

**AN (1) AD- 611 744/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE**

TI (6) TESTS OF PRATT AND WHITNEY MODEL YTF33-P-1 TURBOFAN ENGINE CHARACTERISTICS DURING BIRD INGESTION.

DN (9) Final rept.
AU (10) Millar, Donald M.
RD (11) Jan 1965
PG (12) 27 Pages
PJ (16) 520 004 04X
RN (18) FAA-ADS-30
RC (20) Unclassified report
DE (23) (*TURBOFAN ENGINES, DAMAGE)

BIRDS, PERFORMANCE (ENGINEERING), TESTS, ROTOR BLADES (TURBOMACHINERY),

CONTAMINATION, HAZARDS, AXIALFLOW COMPRESSORS

AB (27) Various quantities of birds were propelled into the engine inlet at velocities on the order of 125 knots by a compressed air gun. An abrupt fluctuation in engine performance was sustained in all tests conducted with subsequent engine recovery and stabilization being attained in periods ranging from approximately 1 to 3 seconds. Residual contamination of the engine resulted in some decrease in overall engine efficiency; however, preingestion power levels could be regained through a minor increase in fuel flow. Large quantities of bird remains were discharged from the fan ducts during each ingestion run regardless of the bird-impact point(s) relative to the engine horizontal axis. This action was attributed to the centrifuging action of the fan section which indicated that a forward-fan configuration would tend to minimize adverse engine/compressor contamination effects induced during a bird-ingestion incident. Substantial damage was incurred by the first-stage fan rotor blades in the course of the program. Although this damage did not impair or prevent continued engine operation, the occurrence of such damage in service would require repair prior to continued flight operation.

AN (1) AD- 456 276/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) VOICE COMMUNICATIONS SWITCHING SYSTEM.

DN (9) Interim rept.

AU (10) Tegeler, Albert E.

RD (11) Dec 1964

PG (12) 15 Pages

RS (14) RD64 132

PJ (16) 222 250 01C

RC (20) Unclassified report

AL (22) Notice: Release only to U. S. Government Agencies is authorized. Other certified request-ers shall obtain release approval from Systems Research and Development Service, Federal Aviation Agency, Washington, D. C., 20333.

DE (23) (*ELECTRONIC SWITCHES, AIR TRAFFIC CONTROL SYSTEMS)

COMMUNICATION AND RADIO SYSTEMS, COMMERCIAL PLANES, AIR TRAFFIC CONTROL

SYSTEMS, COSTS, INTERCOMMUNICATION SYSTEMS

DL (33) 13

AN (1) AD- 612 948/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) EVALUATION OF IN-FLIGHT APPLIED WINDSHIELD RAIN REPELLENTS.

DN (9) Technical rept.

AU (10) Rich, Paul M.

Grisel, Charles R.

RD (11) Dec 1964

PG (12) 38 Pages

PJ (16) 314 002 01V

RN (18) FAA-ADS-32

RC (20) Unclassified report

DE (23) *RAINFALL, *AIRCRAFT, *WINDSHIELD WIPERS

ALL WEATHER AVIATION, AIRCRAFT, FLIGHT TESTING, ATMOSPHERIC PRECIPITATION, RAINDROPS, VISIBILITY

ID (25) rain repellents

AB (27) The type of rain repellents that can be applied in flight were evaluated to determine their effectiveness in improving windshield visibility during precipitation. The repellents were flight-tested on the FAA's Boeing 720 using the Boeing Rain Repellent Application System installed for the copilot's windshield. Comparative 16 mm. motion pictures were obtained of the pilot's and copilot's windshields during approaches to landing in precipitation. Laboratory tests were conducted to determine the effects of these repellents on glass and aluminum over a prolonged period and also to determine the repellents' freezing points. It was concluded that the Boeing Airplane Company's Type 1 and Type 3 rain repellents offer substantial improvement in windshield visibility during rain and, for light rain conditions, are most effective when used in conjunction with windshield wipers. It was also concluded that the U. S. Navy's Foster D. Snell, Inc. Rain Repellent was not compatible with the Boeing Application System and, therefore, could not be properly evaluated. (Author)

AN (1) AD- 611 552/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND

DEVELOPMENT SERVICE

TI (6) FOG CHAMBER TESTS OF CATEGORY II APPROACH, TOUCHDOWN AND RUNWAY

CENTERLINE LIGHTING SYSTEMS.

DN (9) Interim rept.
AU (10) Vipond, Leslie C.
RD (11) Nov 1964
PG (12) 50 Pages
RS (14) RD-64-107
PJ (16) 430 201 01E
RC (20) Unclassified report
NO (21) Prepared from data obtained under Contract ARDS-434 by the University of California.
DE (23) (*FOG, LANDING AIDS), (*LANDING AIDS, LIGHTING EQUIPMENT), (*LANDING LIGHTS, RUNWAYS)
ALL WEATHER AVIATION, NIGHT LANDINGS, FLIGHT TESTING, APPROACH, AIRPORTS, FLIGHT SIMULATORS
AB (27) The report describes testing of airport lighting systems in day and night fog conditions utilizing a very large chamber and producing fog by compressed air and water through nozzles installed along the side of the chamber. The test results reported are those for restricted visibility conditions defined as Category II, wherein the visual range was 1200 ft. Peak candlepower values and photometric distributions required for Category II operations were determined during the tests covered by this report. Various patterns of lights were installed on the floor of the chamber and simulated approaches and landings were made through the fog using a total of 36 experienced pilot observers. The observers rode in an airplane cockpit suspended from overhead rails. The tests showed that present visual aids could be considered adequate, although marginal, for Category II operations at night. In day time fog, however, the higher background brightness had a profound effect and made some of the standard components inadequate. (Author)

AN (1) AD- 613 364/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE
TI (6) AVIATION MEDICAL PAPERS AND REPORTS. A BIBLIOGRAPHY
RD (11) Oct 1964
PG (12) 93 Pages
RS (14) AM-64-20
RC (20) Unclassified report
DE (23) (*AVIATION MEDICINE, BIBLIOGRAPHIES)
CIVIL AVIATION, REPORTS, SUBJECT INDEXING, CATALOGS, INDEXES
AB (27) The bibliography presents an easily accessible record of work done under CAA, FAA and their forerunners in the field of aviation medicine. The document lists those papers and reports available in the Federal

Aviation Agency Headquarters Library.

AN (1) AD- 612 949/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) ANALYSIS OF ENGINE EXHAUST SYSTEM FAILURES IN GENERAL AVIATION AIRCRAFT.
DN (9) Technical rept.
AU (10) Slusher, Gerald R.
RD (11) Sep 1964
PG (12) 36 Pages
PJ (16) 520 003 01X
RN (18) FAA-ADS-29
RC (20) Unclassified report
DE (23) *AIRCRAFT ENGINES, *EXHAUST SYSTEMS
AVIATION SAFETY, STATISTICAL ANALYSIS, CARBON COMPOUNDS, MONOXIDES,
POISONING, FIRES, FAILURE, HEAT EXCHANGERS, MANIFOLDS(ENGINES), EXHAUST
DIFFUSERS, FAILURE(MECHANICS)
AB (27) A study and an analysis were made of the records on engine exhaust system malfunctions in the single engine type general aviation aircraft from the time period of 1958 through 1962 to determine the extent of the inflight hazards involving carbon monoxide poisoning, fire, power loss, etc. The results disclosed approximately 50 percent of the exhaust system failures occurred in the exhaust gas-to-air heat exchanger, 20 percent in the stacks or manifolds, and 20 percent internal to the muffler (baffles and diffusers). Nineteen illnesses and twelve fatalities out of 38 reported incidents of exhaust gases in the cabin were documented. Fourteen fires and 70 incidents of partial engine power loss or complete power failure were also reported. Analysis disclosed that the exhaust systems of newer aircraft fail at a markedly higher rate than the exhaust systems of older aircraft. (Author)

AN (1) AD- 659 035/XAG
FG (2) 170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

TI (6) NOTES ON THE MEASUREMENT OF CONTROL LOAD AND SECTOR DESIGN IN THE

ENROUTE ENVIRONMENT

- AU (10) Arad, Bar-Atid
RD (11) Jun 1964
PG (12) 177 Pages
RC (20) Unclassified report
NO (21) Appendix to the final report of Project 102-11, Control Load, Control Capacity, and Optimal Sector Design, AD-429 906.
DE (23) (*air traffic control systems, operations research)
air traffic, measurement, systems engineering, mathematical models, air traffic controllers, radar, job analysis
AB (27) The objective was to first establish a mathematical model of the enroute air traffic control sector which faithfully described the operational picture and then to set about obtaining valid numbers to satisfy the equations of the model. The objectives of the effort were to obtain a means of measuring control work and load in the sector and then develop a technique of designing sectors which balanced the load with the capacity of the controllers.

AN (1) AD- 451 766/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK AERONAUTICAL CENTER

TI (6) "WHATDUNNIT" AIRCRAFT ACCIDENTS, THEIR INVESTIGATION AND PREVENTION

PRACTICES. SELECTED REFERENCES.

- DN (9) Bibliographic list no. 1.
RD (11) Jan 1964
PG (12) 76 Pages
RC (20) Unclassified report
AL (22) Availability: Microfiche copies only.
DE (23) (*AVIATION ACCIDENTS, BIBLIOGRAPHIES), (*BIBLIOGRAPHIES, AVIATION ACCIDENTS)
AVIATION SAFETY, COMMERCIAL PLANES, TRANSPORTS, JET TRANSPORT PLANES,
JET BOMBERS, JET FIGHTERS, ATTACK BOMBERS, CIVIL AVIATION, COUNTERMEASURES, AIRCRAFT
AB (27) This bibliography contains a list of selected references on aircraft accidents, their investigation and prevention practices. Partially annotated, the list has been divided into four parts: periodical articles, books, reports, and miscellany. (Author)
25

AN (1) AD- 456 653/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION OKLAHOMA CITY OK CIVIL AEROMEDICAL

INST

TI (6) THE EFFECT OF PHYSICAL CONDITIONING ON AN INDIVIDUAL BEFORE AND AFTER

SUFFERING A MYOCARDIAL INFARCTION

- AU (10) Naughton, John
Balke, Bruno
Nagle, Francis
RD (11) Jan 1964
PG (12) 10 Pages
RN (18) FAA-AM-642
RC (20) Unclassified report
DE (23) (*HEART, CARDIOVASCULAR DISEASES), (*CARDIOVASCULAR DISEASES, HEART)
PATHOLOGY, BIOCHEMISTRY, EXERCISE(PHYSIOLOGY), OBESITY, STRESS (PHYSIOLOGY), TRAINING, THERAPY, METABOLISM, RESPIRATION, PHYSIOLOGY,
ELECTROCARDIOGRAPHY, BLOOD PRESSURE, BLOOD CHEMISTRY
AB (27) Personnel engaged in aviation activities are not exempted from the development of coronary heart disease: a 54 year old white male suffered an acute inferoseptal myocardial infarction after he had voluntarily taken part in a regular exercise program designed to improve the conditions of existing hypertension, over-weight and hypercholesterolemia. The post-infarct recuperation was uncomplicated. Four weeks later physical activities were slowly increased from day to day. A remarkable progress in restoring cardio-respiratory efficiency was observed when the training was switched from dull types of exercises to simply competitive ball games. The training response was similar to that observed in normal individuals. Twenty and 23 weeks post-infarct this individual was normotensive, had a normal serum cholesterol concentration and a near-normal body weight. In addition, his capacity for making cardio-respiratory adjustments to high metabolic demands exceeded the originally established level. (Author)

AN (1) AD- 453 578/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) CARDIOVASCULAR HEALTH STATUS, AGE, AND PSYCHOLOGICAL PERFORMANCE

AU (10) Spieth,Walter
RD (11) 1964
PG (12) 8 Pages
RS (14) 64 4
RC (20) Unclassified report
AL (22) Reprint from Jnl. of Gerontology 19:3, 277-284, Jul 64.
DE (23) (*CARDIOVASCULAR SYSTEM, AGING (PHYSIOLOGY)), (*PSYCHOLOGICAL TESTS,
AGING (PHYSIOLOGY))
PERFORMANCE(HUMAN), REACTION (PSYCHOLOGY), MOTOR REACTIONS,
HYPERTENSION, CARDIOVASCULAR DISEASES, PHYSICAL FITNESS, AVIATION
MEDICINE, PSYCHOMOTOR TESTS, STRESS (PHYSIOLOGY), CENTRAL
NERVOUS
SYSTEM, BRAIN, BLOOD CIRCULATION
AB (27) Psychological performance tests were given to more than 600 men aged
23-59. All were in nominally normal health. Mild to moderate degrees
of cardiovascular disease, with apparent cerebral involvement, were
reliably associated with slow and, to a lesser extent, poor
performance. It is concluded that this was not an artifact of attitude
or testing situation. Because cardiovascular disease is common in old
humans and its incidence increases very rapidly after age 35, it is
suggested that much of the typical downward trend of performance with
age is a reflection of cardiovascular diseases rather than of aging per
se. (Author)

AN (1) AD-B209 367/XAG

**FG (2) 010300
110400**

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC FLIGHT
STANDARDS SERVICE**

TI (6) Application of Glass Fiber Laminates in Aircraft.

RD (11) 1964

PG (12) 43 Pages

RN (18) XH-XD

RC (20) Unclassified report

AL (22) Distribution: DTIC users only.

DE (23) *GLASS FIBERS, *LAMINATED GLASS, *REINFORCED PLASTICS
AIRCRAFT, MANUFACTURING, ALUMINUM ALLOYS, FUSELAGES, DURA MATER

DL (33) 12

AN (1) AD- 618 588/XAG

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION**

MEDICINE

**TI (6) DURATION OF SPIRAL AFTEREFFECT AS A FUNCTION OF RETINAL SIZE,
RETINAL**

PLACE, AND HEMIRETINAL TRANSFER

AU (10) Freud,Sheldon L.

RD (11) 16 Dec 1963

PG (12) 8 Pages

RS (14) AM-64-9

RC (20) Unclassified report

NO (21) Pub. in Perceptual and Motor Skills v18 p47-53 1964 (Copies not
available to DDC or Clearinghouse customers).

DE (23) (*AFTERIMAGES, MEASUREMENT), (*VISION, AFTERIMAGES), (*RETINA,
AFTERIMAGES)

FOCUSING, TIME, FUNCTIONAL ANALYSIS, ANATOMY, INTENSITY,
PSYCHOPHYSIOLOGY

ID (25) SPIRAL AFTER-EFFECT

AB (27) This experiment has shown that, although both rods and cones mediate
the spiral aftereffect, cone areas give a larger response. Increasing
size of the retinal image results in longer durations of SAE but rods
are more affected by this increase than are cones. There is a general
weakening in aftereffect resulting from 'transfer' from one hemiretina
to another with cone areas showing greater loss than rod areas. Size
of retinal image was shown to be a potent variable and, in fact, under
some small size conditions, normal Ss fail to observe any effect
whatsoever. In view of these findings, it is apparent that size of
retinal image is a variable which must be carefully controlled if
comparable results are to be obtained. Review of the clinical
literature, however, reveals that distance from S to spiral and
objective spiral size often vary from experiment to experiment. This
variation could well account for some of the differences in results of
clinical studies. It is proposed that a standard spiral size and
testing distance be introduced for clinical use. (Author)

21

AN (1) AD- 618 589/XAG

**CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF
AVIATION**

MEDICINE

TI (6) DURATION AS A MEASURE OF THE SPIRAL AFTEREFFECT

AU (10) Freud,Sheldon L.

RD (11) 11 Sep 1963

PG (12) 5 Pages
RS (14) AM-64-10
RC (20) Unclassified report
NO (21) Pub. in Perceptual and Motor Skills v17 p643-6 1963 (Copies not available to DDC or Clearinghouse customers).
DE (23) (*AFTERIMAGES, MEASUREMENT), (*VISION, AFTERIMAGES) RELIABILITY, FUNCTIONAL ANALYSIS, TIME, INTENSITY, ROTATION, ANALYSIS OF VARIANCE, PSYCHOPHYSIOLOGY, RETINA
ID (25) SPIRAL AFTER-EFFECT
AB (27) The purpose of this experiment was to study the reliability of duration as a measure of the spiral aftereffect. The results for 10 Ss indicate that duration is a highly reliable measure and that duration is a simple monotonic function of exposure-time. (Author)
21

AN (1) AD-A270 860/XAG
FG (2) 170703
040200
CA (5) FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATLANTIC CITY NJ
TI (6) Air Traffic Evaluation of the Automated Surface Observing System (ASOS) displays.
DN (9) Final rept.
AU (10) Benner, William
Malitsky, Chris
RD (11) Sep 1963
PG (12) 66 Pages
RS (14) DOT/FAA/CT-TN93/26
RN (18) XH-DOT/FAA/CT
RC (20) Unclassified report
DE (23) *AIR TRAFFIC CONTROL SYSTEMS, *WEATHER AGREEMENTS, ATMOSPHERICS, COLLECTION, CONTROL, DISPLAY SYSTEMS, ENVIRONMENTS, INTERFACES, INTERNATIONAL AIRPORTS, ISLANDS, KEYBOARDS, MANAGEMENT, MODIFICATION, PERSONNEL, PRODUCTION, QUESTIONNAIRES, SITES, STRATEGIC AREAS, SURFACES, TOWERS, TRAFFIC
AB (27) The Automated Surface Observing System (ASOS) is a weather collection and display system that will be installed in airport traffic control towers (ATCTs) and other strategic areas designated by the National Weather Service (NWS). The ASOS system is being procured, installed, operated, and maintained by the National Oceanic and Atmospheric Administration (NOAA) for the Federal Aviation Administration (FAA)

under a Memorandum of Agreement (MOA). This report encompasses the results of the third evaluation of the limited production ASOS displays and the results of a followup ad hoc meeting after the evaluation was completed. The third ASOS evaluation was conducted at the Will Rogers World Airport, Ok; Wiley Post Airport, Ok; Tulsa International Airport, OK; Lincoln Municipal Airport, NE; Johnson County Airport, KS; Rosecrans Memorial Airport, MO; and Grand Island Airport, NE. On-site air traffic control (ATC) personnel evaluated the ASOS hardware (keyboard and displays) in an operational environment and then completed questionnaires provided by the FAA Technical Center. The completed questionnaires were then analyzed by Technical Center personnel with the results presented at the ad hoc meeting. It was recommended that new modifications be made to the Controller Video Display (CVD) and Operator Interface Device (OID). These modifications were Prioritized with a short- and long-term schedule. ASOS (Automated Surface Observing System), ASOS Evaluation, ASOS Ad Hoc Meeting.

AN (1) AD- 453 580/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE
TI (6) UNSUSPECTED NEUROLOGIC DISEASE IN AVIATION PERSONNEL: SURVIVAL FOLLOWING SEIZURES IN LIGHT
AU (10) Seipel, John H.
Wentz, Arthur E.
RD (11) 1963
PG (12) 7 Pages
RS (14) 64 6
RC (20) Unclassified report
NO (21) No Foreign.
AL (22) Reprint from Aerospace Medicine, 34:6 and 8, Jun and Aug 63. (Copies not supplied by DDC)
DE (23) (*aviation personnel, neuroses), (*neuroses, aviation personnel) diagnosis(medicine), convulsive disorders, electroencephalography, medical examinations, mental disorders, etiology, nervous system, diseases, therapy, reports
ID (25) symptomatology
AB (27) The increasing use of private and commercial air transportation combined with the steady increase in recreational aviation have inevitably increased the likelihood of pilot failure caused by medical disability simply because there are more pilots in the air more frequently. Thus, the problem of the early detection of disease likely to cause incapacity without warning has become serious. The Georgetown

Clinical Research Institute has examined a large number of applicants who had been denied certification at the regional level and who were referred in consultation to determine as precisely as possible their medical status prior to disposition of their applications by higher authority. These airmen have been studied extensively, as is routine for applicants examined in the Institute; additional other studies have been performed in depth where indicated to clarify the status of their diseases and to give baselines for future comparison. Certain case histories are presented in this report. (Author)

AN (1) AD- 453 581/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) CHRONIC THROMBOTIC OBSTRUCTION OF MAJOR PULMONARY ARTERIES

AU (10) Houk,Vernon N.

Hufnagel,Charles A.

McClenathan,James E.

Moser,Kenneth M.

RD (11) 1963

PG (12) 14 Pages

RS (14) 64 7

RC (20) Unclassified report

AL (22) Reprint from the American Jnl. of Medicine,35:2, Aug 63. (Copies not supplied by DDC)

DE (23) (*blood circulation, lung), (*cardiovascular system, obstruction (physiology))

thrombosis, arteries, embolism, surgery, electrocardiography, thorax, x ray photography, blood analysis, anticoagulants, diagnosis(medicine)

ID (25) symptomatology

AB (27) A case is reported of chronic massive thromboembolic occlusion of major pulmonary arterial branches successfully treated with embolectomy and endarterectomy. The historic features, physical signs and pathophysiologic alterations which form the basis for the diagnosis of this disorder are reviewed. (Author)

AN (1) AD-A279 659/XAG

FG (2) 010100

010600

010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Airplane Airworthiness; Transport Categories.

RD (11) Sep 1962

PG (12) 385 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRWORTHINESS, *CIVIL AVIATION, *AERODYNAMIC STABILITY, *FIRE PROTECTION

TRANSPORT AIRCRAFT, INSTRUCTION MANUALS, FLIGHT TESTING, AIRCRAFT LANDINGS, MANEUVERABILITY, AERODYNAMIC LOADING

AN (1) AD-A280 682/XAG

FG (2) 010300

010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Obstruction Marking and Lighting.

RD (11) Sep 1962

PG (12) 48 Pages

RN (18) XH-XD

RC (20) Unclassified report

DE (23) *AIRCRAFT LANDINGS, *LANDING AIDS

LIGHTING EQUIPMENT, BLOCKING, HAZARDS, MILITARY STANDARDS, COLLISION

AVOIDANCE, LANDING LIGHTS, AIRCRAFT MARKINGS

AN (1) AD- 611 881/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION

MEDICINE

TI (6) THE PHYSIOLOGICAL LOCUS OF THE SPIRAL AFTER-EFFECT

AU (10) Freud,Sheldon L.

RD (11) 11 Jul 1962

PG (12) 9 Pages

RS (14) AM-64-17

RC (20) Unclassified report

NO (21) Pub. in American Journal of Psychology (U.S.) v77 p422-8 Sep 1964 (Copies not available to DDC or Clearinghouse customers).

DE (23) (*VISION, AFTERIMAGES), (*RETINA, AFTERIMAGES), (*AFTERIMAGES, RETINA)

ILLUSIONS, CENTRAL NERVOUS SYSTEM, PHYSIOLOGY

ID (25) SPIRAL AFTER-EFFECT

21

AN (1) AD- 616 849/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) DESIGN FOR THE NATIONAL AIRSPACE UTILIZATION SYSTEM.
DN (9) First ed.
RD (11) 30 Jun 1962
PG (12) 459 Pages
RC (20) Unclassified report
NO (21) Available from Superintendent of Documents, GPO, Washington, D. C. 20402, HC\$2.50, as FAA 2.2: Ai7/5. Available from CFSTI MF\$2.25.
DE (23) (*aeronautics, systems engineering), (*systems engineering, aeronautics)
design, aircraft, aviation safety, air traffic, air traffic control systems, airports, aircraft equipment, data processing
AB (27) A status report is given which presents a preliminary system design for airspace utilization involving the safe and efficient use of air vehicles.
24

AN (1) AD- 659 034/XAG
FG (2) 050300
170703
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE
TI (6) AIR TRAFFIC CONTROL SYSTEMS COSTS.
DN (9) Memo. rept.
RD (11) Jun 1962
PG (12) 52 Pages
RC (20) Unclassified report
DE (23) (*air traffic control systems, costs)
maintenance, navigation, management planning and control, operation, selection, airports, supersonic aircraft
AB (27) The report contains information on the estimated costs for the establishment, maintenance and operation of ATC systems, subsystems, facilities, and equipment. It is intended to provide guidance to SRDS personnel engaged in the planning, development, testing and selection of new ATC systems and subsystems. At the present time, there is no central location within the FAA where cost information can be obtained. The document was prepared as a first step in filling that gap. Only major facilities were included in this initial effort. (Author)

AN (1) AD- 696 978/XAG
FG (2) 010400
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT STANDARDS SERVICE
TI (6) STATISTICAL PRESENTATION OF OPERATIONAL LANDING PARAMETERS FOR TRANSPORT JET AIRPLANES
AU (10) Geoffrion, D. R.
Kibardin, V. M.
RD (11) Jun 1962
PG (12) 53 Pages
RC (20) Unclassified report
DE (23) (*aircraft landings, range(distance)), (*range(distance) standards), phototheodolites, statistical analysis, approach, attitude, velocity, deceleration, landing gear, flight instruments
ID (25) attitude
AB (27) This report contains the results of phototheodolite data accumulated on 183 daylight landing operations of scheduled air carriers flying the Boeing 707, 707B, 720, 720B, Convair CV-880, and Douglas DC-8 jet airplane models. These measurements were obtained during the months of June and July 1961 at Chicago O'Hare Airport, San Francisco International Airport, Denver Stapleton Airport, and Dallas Love Field.

AN (1) AD- 279 863/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C
TI (6) Airport Management. A Selected List of References.
RD (11) Mar 1962
PG (12) 14 Pages
RS (14) FAA-Bibliographic List - 3
RC (20) Unclassified report

AN (1) AD- 453 579/XAG
CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF AVIATION MEDICINE
TI (6) CURRENT STATUS OF CLOT DISSOLUTION THERAPY
AU (10) Moser, Kenneth M.
RD (11) 1962
PG (12) 8 Pages
RS (14) 64 5
RC (20) Unclassified report

AL (22) Reprint from General Practitioner, 26:5, pp.95-102, Nov 62. (Copies not supplied by DDC)

DE (23) (*thrombosis, therapy), (*anticoagulants, biochemistry) blood vessels, obstruction, casein, enzyme precursors, plasmin, phosphorus transferances, toxicity, dosage, fibrinogen, hemorrhage, parental infusions, pharmacology, cariovascular

AB (27) Clot dissolution using fibrinolytic agents is a promising approach to the treatment of thromboembolic disease, particularly peripheral venous and arterial occlusion. In their present state of development, these agents are not recommended for general use in thrombosis or embolism in the cerebral or coronary circulations. Dosage units are still not standardized. The commercially available "fibrinolysins" are, in reality, combinations of plasmin (or fibrinolysin) and an activator of plasminogen (or profibrinoly/in). Physicians must know the limitations of these preparations and the factors that alter dosage requirements. (Author)

AN (1) AD- 279 022/XAG

FG (2) 010500

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) AIRPORT SITE SELECTION. A SELECTED LIST OF REFERENCES

RD (11) 26 Dec 1961

PG (12) 4 Pages

RS (14) FAA-Bibliographic List - 1

RC (20) Unclassified report

DE (23) (*airports, site selection)

bibliographies, civil aviation, jet aircraft, urban areas

AN (1) AD- 280 283/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) EVALUATION OF TELETYPEWRITER MODIFICATIONS FOR AUTOMATIC GROUND/AIR/GROUND COMMUNICATION SYSTEM

DN (9) Final rept.

AU (10) Yulo, Carlo
Sullivan, W. F.

RD (11) Oct 1961

PG (12) 48 Pages

RC (20) Unclassified report

AN (1) AD- 280 841/XAG

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

TI (6) COMPARATIVE CONSPICUITY OF SEVERAL AIRCRAFT EXTERIOR PAINT PATTERNS

RD (11) Jun 1961

PG (12) 52 Pages

RS (14) FAA-TR-2

RC (20) Unclassified report

AN (1) AD-A955 270/XAG

FG (2) 200400

010300

CA (5) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

TI (6) Simplified Flutter Prevention Criteria for Personal Type Aircraft.

DN (9) Engineering rept. no. 45

AU (10) Rosenbaum, Robert

RD (11) 1955

PG (12) 27 Pages

RC (20) Unclassified report

DE (23) *AEROELASTICITY, *FLUTTER, *AERODYNAMICS

WIND TUNNEL TESTS, AIRFOILS, CONTROL SURFACES, WINGS, AILERONS, RUDDERS

ID (25) U/A reports

FAA OFFICE OF AVIATION MEDICINE
CIVIL AEROMEDICAL INSTITUTE
PUBLICATIONS
AVIATION MEDICINE REPORTS NOT FOUND IN DTIC TR DATABASE

Report No: DOT/FAA/AM-01/6

Title and Subtitle: Documentation of validity for the AT-SAT computerized test battery, Volume II.

Report Date: March 2001

Authors: Ramos, R.A., Heil, M.C., and Manning, C.A.

Abstract: This document is a comprehensive report on a large-scale research project to develop and validate a computerized selection battery to hire Air Traffic Control Specialists (ATCSs) for the Federal Aviation Administration (FAA). The purpose of this report is to document the validity of the Air Traffic Selection and Training (AT-SAT) battery according to legal and professional guidelines. An overview of the project is provided, followed by a history of the various job analyses efforts. Development of predictors and criterion measures are given in detail. The document concludes with the presentation of the validation of predictors and analyses of archival data.

Key Words: Air Traffic Controllers, Selection, Assessment, Job Analyses

No. of Pages: 179

Report No: DOT/FAA/AM-01/5

Title and Subtitle: Documentation of validity for the AT-SAT computerized test battery, Volume I.

Report Date: March 2001

Authors: Ramos, R.A., Heil, M.C., and Manning, C.A.

Abstract: This document is a comprehensive report on a large-scale research project to develop and validate a computerized selection battery to hire Air Traffic Control Specialists (ATCSs) for the Federal Aviation Administration (FAA). The purpose of this report is to document the validity of the Air Traffic Selection and Training (AT-SAT) battery according to legal and professional guidelines. An overview of the project is provided, followed by a history of the various job analyses efforts. Development of predictors and

criterion measures are given in detail. The document concludes with the presentation of the validation of predictors and analyses of archival data.

Key Words: Air Traffic Controllers, Selection, Assessment, Job Analyses

No. of Pages: 165

Report No: DOT/FAA/AM-01/4

Title and Subtitle: Latent Trait Theory Analysis of Changes in Item Response Anchors

Report Date: February 2001

Authors: Farmer, W.L., Thompson, R.C., Heil, S.K.R., and Heil, M.C.

Abstract: The purpose of this study was to evaluate the effect that modifications in item response anchors have on responses to survey items.

Twenty-nine items were administered in 1993 and 1995 as part of more extensive attitude surveys to two random samples of Federal Aviation Administration employees. Changes in the response scales (5-point Likert) between the two survey administrations ranged from no change at all to extensive re-anchoring of the response categories. Item responses were modeled via two-parameter graded response models based on item response theory. Changes in the way the item responses functioned between both years were assessed using the differential item functioning (DIF) method recommended by Muraki (1997). Twenty-four of the 29 items displayed significant levels of DIF, indicating that the response categories did not measure the constructs of interest in a similar fashion across the two administrations. Items whose response anchors had been changed substantially exhibited significant DIF more frequently than those where the change in anchors was less drastic. These results suggest that researchers and practitioners take a conservative approach when considering the revision of measuring scales for a particular set of items.

Key Words: Item Anchors, Latent Trait Theory, Item Response Theory, Differential Item Functioning, Measurement Equivalence

No. of Pages: 18

Report No: DOT/FAA/AM-01/3

Title and Subtitle: A Human Error Analysis of Commercial Aviation Accidents Using the Human Factors Analysis and Classification System (HFACS)

Report Date: February 2001

Authors: Wiegmann, D.A., and Shappell, S.A.

Abstract: The Human Factors Analysis and Classification System (HFACS) is a general human error framework originally developed and tested within the U.S. military as a tool for investigating and analyzing the human causes of aviation accidents. Based upon Reason's (1990) model of latent and active failures, HFACS addresses human error at all levels of the system, including the condition of aircrew and organizational factors. The purpose of the present study was to assess the utility of the HFACS framework as an error analysis and classification tool outside the military. Specifically, HFACS was applied to commercial aviation accident records maintained by the National Transportation Safety Board (NTSB). Using accidents that occurred between January 1990 and December 1996, it was demonstrated that HFACS reliably accommodated all human causal factors associated with the commercial accidents examined. In addition, the classification of data using HFACS highlighted several critical safety issues in need of intervention research. These results demonstrate that the HFACS framework can be a viable tool for use within the civil aviation arena.

Key Words: Aviation, Human Error, Accident Investigation, Database, Analysis, Commercial Aviation

No. of Pages: 17

Report No: DOT/FAA/AM-01/2

Title and Subtitle: Access-To-Egress: A Meta-Analysis of the Factors That Control Emergency Evacuation Through the Transport Airplane Type-III Overwing Exit

Report Date: January 2001

Authors: McLean, Garnet A.

Abstract: The factors that control emergency evacuation from transport aircraft are many. The physical factors include the aircraft structure and the configuration of aircraft interior components such as aisles, seating

arrangements, monument placements, and crewmember assist spaces. Information factors related to emergency evacuation include safety briefing cards and videos, signs, placards, emergency lighting and marking systems, and verbal briefings by the crew. Trained crewmembers perform the functions necessary to initiate and conduct emergency evacuations, providing passenger management functions intended to produce fast and effective evacuations. Individual passengers have a large, typically negative, impact on the conduct of emergency evacuations, resulting from their general naivete regarding aircraft emergencies and the proper procedures needed to cope with such circumstances. Egress through the Type-III overwing exit is particularly susceptible to this deficiency, since passengers typically must operate the exit as well as use it.

Research efforts conducted to define the relative contributions of these factors have been focused to a large degree on the interior configuration of transport aircraft, attempting to establish the appropriate access-to-egress required. These studies have employed an array of techniques and posited an assortment of experimental questions designed to address the issue, resulting in a comprehensive body of evidence related to access-to-egress, particularly for the Type-III exit. Additional information has been provided about many of the other factors that also exert control of evacuations, allowing assessments to be made regarding the relative importance of individual factors, and their various combination(s), on the outcome of emergency evacuations.

This analytical review of the studies conducted to address access to the Type-III exit has confirmed that human factors effects related to passengers present the biggest challenge to the execution of successful evacuations. Deficiencies that may exist regarding configural and informational egress factors are expressed through their interactions with these human factors effects, which have often made determination of specific deficiencies more difficult. Solutions to overcoming deficiencies must address both the specific deficiency and its interactivensess.

Key Words: Aircraft Evacuation, Passageway Configuration, Human Factors, Hatch Operation, Competitive Behavior

No. of Pages: 31

Report No: DOT/FAA/AM-01/1

Title and Subtitle: Index to FAA Office of Aviation Medicine Reports:1961 through 2000

Report Date: January 2001

Authors: Collins, W.E., and Wayda, M.E.

Abstract: An index to Federal Aviation Administration Office of Aviation Medicine Reports (1964-2000), CARI Reports (1961-1963), and Civil Aeromedical Institute Reports is presented for those engaged in aviation medicine and related activities. The index lists all FAA aviation medicine reports published from 1961 through 2000: chronologically, alphabetically by author, and alphabetically by subject. A foreword describes historical aspects of the Civil Aeromedical Institute's 40 years of service, describes the index's sections, and explains how to obtain copies of published Office of Aviation Medicine technical reports.

Key Words: Aviation Medicine, Research Reports, Office of Aviation Medicine, Civil Aeromedical Institute, History, Funding and Personnel Levels

No. of Pages: 106

Report No: DOT/FAA/AM-00/34

Title and Subtitle: A fatality caused by hydrogen sulfide produced from an accidental transfer of sodium hydrosulfide into a tank containing iron sulfate and sulfuric acid.

Report Date: November 2000

Authors: Chaturvedi, A.K., Smith, D.R., and Canfield, D.V.

Abstract: The National Transportation Safety Board has an agreement with the Federal Aviation Administration (FAA) that the FAA's Civil Aeromedical Institute (CAMI) provide toxicological services for selected surface transportation accidents. Under this agreement, postmortem biosamples from a hazardous chemical accident fatality were submitted to CAMI for toxicological evaluation. The victim succumbed from breathing the hydrogen sulfide (H₂S) gas produced by an accidental transfer of sodium hydrogen sulfide (NaHS) from a tanker truck to a tank containing 4% sulfuric acid (H₂SO₄) and iron(II) sulfate (FeSO₄). After inhaling the gas, the 55-year old male Caucasian truck driver was dead at the scene. Autopsy examination of the decedent's body revealed pulmonary edema and passive congestion in lungs, spleen, kidneys, and adrenal glands. The submitted samples were analyzed for carbon monoxide, cyanide, alcohols, and drugs. Since a potential exposure to H₂S was involved, blood was also analyzed for sulfide

(S²⁻). The analysis entailed isolating S²⁻ from blood as H₂S using 0.5 M H₃PO₄, trapping the gas in 0.1 M NaOH, and determining the electromotive force using a sulfide ion specific electrode. Carbon monoxide, cyanide, or ethanol was not detected in blood, but acetaminophen at a therapeutic concentration of 14.3 µg/mL of blood was found, and metoprolol was detected in the blood, liver, and kidney samples. Analysis further revealed the presence of S²⁻ in blood at the level of 1.68 µg/mL. This S²⁻ concentration is approximately 2 times higher than that reported in the blood of 2 separate fatalities associated with accidental exposures to H₂S. The blood S²⁻ value in the present case was about 34 times higher than the blood S²⁻ concentration (< 0.05 µg/mL) in normal subjects. The observed pulmonary edema and the passive congestion in various organs were also in agreement with the pathological characteristics of H₂S poisoning. Since H₂S toxicity manifests rapidly by inhibiting the cytochrome oxidase system, causing histotoxic cellular hypoxia, death occurs quickly. Based on the case history, pathological findings, and blood S²⁻ concentration, it is concluded that the cause of death was H₂S poisoning associated with a hazardous material accident in an industrial situation.

Key Words: Forensic Sciences, Toxicology, Acetaminophen, Metoprolol, Hydrogen Sulfide, Hazardous Material, Accident Investigation

No. of Pages: 7

Report No: DOT/FAA/AM-00/29

Title and Subtitle: Distribution of butalbital in biological fluids and tissues.

Report Date: August 2000

Authors: Lewis, R.J., Southern, T.L., Cardona, P.S., Canfield, D.V., and Garber, M.

Abstract: During the investigation of fatal aviation accidents, postmortem samples from the pilot/copilot are submitted to the Federal Aviation Administration's (FAA's) Civil Aeromedical Institute for toxicological analysis. Blood specimens are received in approximately 70% of the fatal aviation accidents analyzed by the FAA's Toxicology and Accident Research Laboratory. The lack of blood available is usually due to the severe damage to a pilot's body during an aviation accident and/or to the length of time taken to recover the body following an accident. Therapeutic and toxic levels for most drugs are reported in the scientific literature for blood and plasma only. Therefore, it is imperative for an accident investigator and forensic

toxicologist to be able to estimate drug concentrations in a fatal aviation accident victim's blood from the available concentrations in the tissue. This is exemplified by a recent aviation fatality where butalbital was identified in muscle tissue of a pilot, and the investigators wanted to know the approximate butalbital concentration expected in the victim's blood. Butalbital, a short-acting barbiturate found in combination with other drugs such as acetaminophen, aspirin, codeine, and caffeine, is commonly prescribed for the treatment of tension headaches. Certain side effects of butalbital, such as drowsiness, sedation, dizziness, and a feeling of intoxication, could affect pilot performance and become a significant factor in an aviation accident. Thus, our laboratory determined the distribution of butalbital in various postmortem tissues and fluids. The distribution coefficients established for butalbital, expressed as specimen/blood ratios, were found to be as follows: muscle (0.66 ± 0.09), kidney (0.98 ± 0.09), lung (0.87 ± 0.06), spleen (0.75 ± 0.03), brain (0.96 ± 0.07), liver (2.22 ± 0.04), liver fluid (0.89 ± 0.23), heart (0.91 ± 0.17), bile (0.94 ± 0.22), and urine (0.73 ± 0.16). The results demonstrate that muscle, kidney, lung, spleen, brain, liver, and heart can be used reliably to estimate butalbital blood concentrations.

Key Words: Forensic Science, Toxicology, Butalbital, Distribution, Sedative, Postmortem Drug Analysis, Aircraft Accident Investigation

No. of Pages: 7

Report No: DOT/FAA/AM-00/26

Title and Subtitle: Priorities, organization, and sources of information accessed by pilots in various phases of flight.

Report Date: July 2000

Authors: Schvaneveldt, R., Beringer, D.B., Lamonica, J., Tucker, R., and Nance, C.

Abstract: In the first project of the study, 27 pilots rated the priority of information required for flight. These pilots were divided by flight experience into novices (65 to 820 hours' flight time) and experienced pilots (1600 to 17,000 hours' flight time). Participants rated 29 information elements across seven phases of flight. These data show the shifting priorities of information across phases of flight, and some clear differences in priority assignments appeared between the novices and the experienced pilots. In the second project, 34 pilots, some from Project 1, participated in the collection of relatedness data for 231 pairs of information elements. A Pathfinder analysis

and hierarchical clustering were conducted showing connections among these elements and grouping of the elements. Pilot experience had little influence on the form of the network of associations. The discussion explores the potential of these data for instrumentation layout and integration of cockpit information systems, datalink design, and development of flight instruction curricula.

Key Words: Flight Information, Pathfinder Analysis, Clustering of Flight Information, Priorities of Flight Information

No. of Pages: 43

Report No: DOT/FAA/AM-00/23

Title and Subtitle: Gender differences in a refractive surgery population of civilian aviators

Report Date: July 2000

Author: Nakagawara, V.B., and Montgomery, R.W.

Abstract: INTRODUCTION. Refractive surgical procedures performed in the United States have increased in recent years and continued growth is projected. Postoperative side effects can affect the quality of vision and may be unacceptable in a cockpit environment. The scientific literature suggests certain females (pregnant, menopausal, elderly) are more likely to experience complications and have less than optimal visual performance after refractive surgery. This study reviews the civil aeromedical experience with refractive surgery by gender.

METHODS. A list of airmen with Federal Aviation Administration (FAA)-specific pathology codes 130 (radial keratotomy) and 5179 (general eye pathology with surgical prefix), during the period 1 January 1994 through 31 December 1996, was generated from FAA medical databases. The records of airmen with pathology code 5179 were reviewed and those identified as having refractive surgery were collated into a database with those who had pathology code 130. The records were then stratified by class of medical certification and gender, and analyzed using demographic data extracted from FAA publications.

RESULTS. There were 3,761 airmen identified as having had refractive surgical procedures during the study period. The prevalence rate for refractive surgery was found to be significantly higher ($p < 0.05$) for female (8.74/1,000) than for male (6.06/1,000) aviators. Prevalence rates for all classes of FAA medical certification were also found to be significantly higher

for female aviators. **CONCLUSIONS.** Higher prevalence rates for female aviators with refractive surgical procedures suggest that they view refractive surgery to be a more viable alternative for correcting refractive error than do their male counterparts. With the more frequent post-surgical complications for selected females with these procedures, further research is recommended to investigate the potential for operational problems in the aviation environment. Continued monitoring may determine whether there is an increased risk of performance loss associated with normal age-related ocular changes.

Key Words: Aviation; Vision; Refractive Surgery; Gender; Aeromedical Certification; Occupational Health
No. of Pages: 11

Report No: DOT/FAA/AM-00/22

Title and Subtitle: Abnormal glucose levels found in transportation accidents

Report Date: June 2000

Author: Canfield, D.V., Chaturvedi, A.K., Boren, H.K., Véronneau, S.J.H., and White, V.L.

Abstract: *Purpose.* The Federal Aviation Administration's Office of Aviation Medicine (OAM) is responsible for the certification of pilots with diabetic conditions. Therefore, it is essential for OAM to monitor pilots involved in fatal accidents for abnormal glucose levels, which might have caused performance impairment/ incapacitation. The present study evaluated the use of postmortem vitreous humor and urine glucose levels in transportation accident fatalities as indicators of potentially incapacitating medical conditions or performance impairment. *Methods.* Vitreous humor and/or urine from 192 accident fatalities were analyzed for glucose using a hexokinase method. Cases with values below the lower limit of detection (10 mg/dL) and above 3 standard deviations (SD) from the mean were not included in the final statistics. All cases more than 5 SD above the mean were deemed abnormal and a full case history was evaluated based on the available medical history. *Results.* The mean glucose concentration was 30 mg/dL (SD: 21 mg/dL) from 98 postmortem vitreous humor specimens, while it was 27 mg/dL (SD: 16 mg/dL) from 127 postmortem urine samples. Nine of the 192 cases were identified as having abnormal glucose levels. Abnormal glucose levels were found in 5 of the 8 cases with a known diabetic condition. Glycosuria or low renal threshold was reported in 2 fatal pilots; 1 of these pilots had an

abnormal glucose level. *Conclusions.* Hyperglycemia can be established from the vitreous humor and urine glucose levels, but hypoglycemia cannot, because of the rapid postmortem drop in vitreous humor glucose levels. All of the pilot abnormal glucose cases detected were previously identified during the medical certification process or had a medical reason for the abnormal level. The elevated vitreous humor and urine glucose levels have proven useful in identifying individuals with a pre-existing diabetic condition that might have been a factor in the accident.

Key Words: Forensic Science, Toxicology, Diabetes, Glucose, Urine, Vitreous humor, Postmortem Aircraft Accident Investigation

No. of Pages: 14

Report No: DOT/FAA/AM-00/20

Title and Subtitle: A novel method for the determination of sildenafil (Viagra®) and its metabolite in postmortem specimens using LC/MS/MS and LC/MS/MS.

Report Date: May 2000

Authors: Lewis, R.J., Johnson, R.D., and Blank, C.L:

Abstract: During the investigation of aviation accidents, postmortem samples from victims are submitted to the FAA's Civil Aeromedical Institute for drug analysis. Because new drugs are continually being released to the market, it is our laboratory's responsibility to develop methods which can identify these new drugs. This paper presents a rapid and reliable method for the identification and quantitation of sildenafil (Viagra®) and its metabolite, UK-103,320. Sildenafil, when used properly, is relatively safe. There are, however, certain side effects that could create potential hazards. For example, Sildenafil has been shown to potentiate the hypotensive effects of nitrates commonly employed in the treatment of certain heart conditions. The procedure described herein incorporates solid-phase extraction and LC/MS/MS and MS/MS/MS utilizing an atmospheric pressure chemical ionization (APCI) ion trap mass spectrometer (MS) in the positive ionization (PCI) mode. Solid-phase extraction provided an efficient sample extraction yielding recoveries of approximately 80%. This method is highly selective and sensitive, having a limit of detection of 1 ng/mL for both compounds. Sildenafil and UK-103,320 were found to have a linear dynamic range of 2-800 ng/mL and 4-800 ng/mL, respectively. This procedure showed intra-day (within day) relative error of equal to or less than 6% and relative standard

deviation (RSD) within 4% for both the 50 ng/mL and 200 ng/mL controls. The inter-day (between day) relative errors were equal to or less than 4%, while the RSD was within 12% for both control concentrations. Sildenafil and UK-103,320 were found to be stable in blood for at least one week at 4°C. This method was also used for the determination of sildenafil and UK-103,320 in postmortem fluid and tissue specimens collected from fatal aviation accident victims.

Key Words: Forensic Science, Toxicology, Erectile Dysfunction, Sildenafil, Viagra, LC/MS, LC/MS/MS, LC/MS/MS/MS, Aircraft Accident Investigation

No. of Pages: 15

Report No: DOT/FAA/AM-00/19

Title and Subtitle: Refractive surgery in aircrew members who fly for scheduled and non-scheduled civilian airlines.

Report Date: May 2000

Authors: Nakagawara, V.B., Wood, K.J., and Montgomery, R.W.

Abstract: Introduction. Civil airmen with refractive surgery are present in all classes of aeromedical certificate holders. Refractive surgical procedures have been associated with numerous side effects, including glare, reduced contrast sensitivity, and fluctuating visual acuity. These side effects may render the quality of vision unacceptable in the cockpit environment. This study reviews the aeromedical certification experience with refractive surgery in aircrew members who fly for civilian airlines. Methods. Active airmen with FAA-specific pathology codes 130 (radial keratotomy) and 5179 (general eye pathology with surgical prefix) in the Consolidated Airman Information System medical database during the period 1 January 1994 through 31 December 1996 were identified. Airmen were stratified into those with a first-class medical certificate, an occupational code 1 (pilot, copilot, first, and second officer) or code 2 (flight engineer), and an employer code of a scheduled or nonscheduled airline. The medical records of these airmen were reviewed, and the clinical data were collated and analyzed. Results. A total of 133 flight crewmembers (125 pilots and 8 flight engineers) were identified as employees of airlines and having had refractive surgery. Seventeen airmen (12.8%) were miscoded and 2 airmen (1.5%) were lost to follow-up. Of the 114 pilots with refractive surgery, 97 (85.1%) were incisional procedures, 15 (13.2%) were laser procedures, and 2 (1.7%) were complex surgical procedures. Three airmen (2.6%) had serious complications resulting from

the refractive procedure, including postoperative stromal haze, depth perception problems, and a perforated cornea and crystalline lens resulting in a cataract. Conclusions. The preponderance of aircrew members who have had refractive surgery and fly for scheduled or nonscheduled airlines have incisional refractive procedures, which reportedly have the most critical visual side effects. A considerable number of airmen have had laser procedures, of which the long-term effects are still unknown. Although some serious complications have resulted from refractive surgery, the study indicates these complications have not affected an applicant's ability to receive an airman medical certificate.

Key Words: Aviation; Vision; Refractive Surgery; Aeromedical Certification; Occupational Health

No. of Pages: 11

Report No: DOT/FAA/AM-00/15

Title and Subtitle: Guidelines for bootstrapping validity coefficients in ATCS selection research.

Report Date: May 2000

Authors: Russell, C.J., Dean, M.A., and Broach, D.M.

Abstract: This technical report 1) reviews the literature on bootstrapping estimation procedures and potential applications to the selection of air traffic control specialists (ATCSs), 2) describes an empirical demonstration of procedures for estimating the sample size required to demonstrate criterion-related validity in ATCS selection, and 3) provides summary guidelines and recommendations for estimating sample size requirements in ATCS selection test validation using bootstrapping procedures under conditions of direct and indirect range restriction. Bootstrapping estimates the sampling distribution of a statistic by iteratively resampling cases from a set of observed data. Confidence intervals are constructed for the statistic, providing an empirical basis for inferential statements about the likely magnitude of the statistic. Correlations between scores on the written ATCS aptitude test battery and subsequent performance in initial qualification training for a large sample of 10,869 controllers hired between 1986 and 1992 were bootstrapped in an empirical demonstration of the methodology. Finally, a three-step sequence of procedures is described for use in future bootstrap estimates of confidence intervals. Recommendations for sample size requirements in future ATC criterion validity studies include:

1. Results suggest samples of at least $N = 175$ to ensure the 90% confidence interval for r_{xy} does not contain 0. Assumptions of bivariate normality in traditional parametric estimation procedures are not justified in the current data. Note that this observation may result in confidence intervals that are **wider or narrower** for any given sample size than intervals obtained from traditional parametric estimation.
2. Corrections for direct range restriction did not substantively influence whether the bootstrapped 90% confidence interval contained 0. Future applications should assess whether this holds true.
3. Given the apparent absence of bivariate normality in the current data, similar bootstrapping procedures should be used to assess whether the 90% confidence intervals for $\rho - \rho_0$ and $R_{Y.X1X2} - R_{Y.X1}$ contain 0.

Overall, the results suggest that bootstrapping of validity coefficients in controller selection research may be technically feasible. However, legal considerations may limit practical use of the methodology until accepted professional guidelines, standards, and principles are revised to accommodate innovative methodologies.

Key Words: Bootstrapping; Validity; Air Traffic Control Specialist Selection
No. of Pages: 38

Report No: DOT/FAA/AM-00/14

Title and Subtitle: Organizational change: An assessment of trust and cynicism.

Report Date: May 2000

Authors: Thompson, R.C., Joseph, K.M., Bailey, L.L., Worley, J.A., and Williams, C.A.

Abstract: In the organizational science literature, organizational cynicism is generally considered to be conceptually distinct from organizational trust. This proposition, however, has not been adequately assessed. The present study attempts to distinguish these two constructs by utilizing organizational-level focused measures. Two surveys were administered about six months apart to members of a division that was undergoing change in a large federal agency. Data could be matched for 70 of the respondents on the two surveys. The results show that a measure of cynicism about change does not predict trust in coworkers or trust in work area managers, but does predict trust in division managers. These results do not conclusively demonstrate a

distinction between the two constructs, however, they suggest that the constructs are related in a predictable manner. Finally, from the data obtained in this study of an organizational group undergoing change, it appears that trust of management is related to increased workgroup cohesion, and that trust is not due only to workforce cynicism. Instead, trust and cynicism may need to be addressed separately by management in order to most successfully implement change.

Key Words: Organizational Cynicism, Organizational Trust, Organizational Change

No. of Pages: 12

Report No: DOT/FAA/AM-00/11

Title and Subtitle: Evacuee injuries and demographics in transport airplane precautionary emergency evacuations.

Report Date: March 2000

Author: Hynes, M.K.

Abstract: During a nine-year period from January 1, 1988, through December 31, 1996, there were more than 500 transport airplane precautionary emergency evacuations (PEEvacs), occurring on average about once a week. Each year as many as 6,000 persons participated in these events. In many cases, passenger and crewmember injuries resulted from the PEEvacs, resulting in large personal costs to passengers and crewmembers, as well as financial costs estimated to be in excess of \$11 million annually to airlines.

This study was undertaken to sample available evacuee and injury data related to a subset of those PEEvacs, including information on types and causes of evacuee injuries, and evacuee age and gender. Other demographics were sought, but that information was generally unavailable. Unique, direct contacts with airport management were used to supplement publicly available information on certain of the PEEvacs, including activation of emergency escape slides during PEEvacs, injuries caused by the PEEvacs, and outcomes.

Of the 136 airports identified as experiencing PEEvacs, 24 were selected to provide detailed data on injured evacuees for a 34-month interval lasting from December 1994 through November 1996. During this time frame, there were 109 precautionary evacuations at the 24 airports selected, i.e., approximately 70% of all reported evacuation events that occurred during the study period.

Specific information on 193 persons injured during 19 of these evacuations was obtained and analyzed.

The results of this study confirm the need for improved incident reporting and continued research into preventing injuries associated with the use of emergency egress systems and precautionary emergency evacuations of transport airplanes. The results should be additionally useful when considering proposed changes to applicable regulations and to airline training programs and aircraft emergency operations.

Key Words: Emergency Egress, Evacuation, Airline Operations, Passenger Injuries, Economic Loss, Airline Economics
No. of Pages: 17

Report No: DOT/FAA/AM-00/10

Title and Subtitle: The effects of napping on night shift performance.

Report Date: February 2000

Authors: Della Rocco, P.S., Comperatore, C., Caldwell, L., and Cruz, C.E.

Abstract: This study represents a collaborative effort between the Federal Aviation Administration's Civil Aeromedical Institute and the US Army Aeromedical Research Laboratory to investigate the effects of napping on the midnight shift as a potential countermeasure to sleepiness during the shift. The purpose of the present paper was to examine the patterns of performance degradation along with the subjective measures of mood, sleep quality, and sleepiness as a function of napping condition and time on task during the midnight shift. Sixty Air Traffic Control Specialists (ATCSs) were randomly assigned to one of the three midnight shift napping conditions: a long nap (LN) of 2 hours, a short nap (SN) of 45 minutes, and a no nap condition (NN). ATCSs completed a four-day protocol during which they worked three early morning shifts (0700-1500) followed by a rapid rotation to the midnight shift (2300-0700). Subjects completed three 1.5 hour test sessions (one session before the nap and 2 sessions after the nap) during the midnight shift involving two computer-based tasks: 1) the Air Traffic Scenarios Test (ATST), a task developed for selection of ATCSs, and 2) the Bakan, a test of vigilance. Data were analyzed using repeated measures analysis of variance and post-hoc multiple comparisons. Both cognitive performance and subjective measures of sleepiness supported the use of naps during the midnight shift. In fact, both the long nap of 2 hours and the

short nap of 45 minutes resulted in better performance than no nap on the Bakan test at the end of the midnight shift. A dose-response relationship existed such that the long nap also resulted in better performance than the short nap. The ATST, on the other hand, was much less sensitive to differences in napping condition and even to the natural circadian trough, which would have been expected to affect all groups. Sleepiness ratings on the Stanford Sleepiness Scale suggested that, while sleepiness increased across the midnight shift for all groups, ratings were generally lower for the LN condition and were lower for males in the SN condition, when compared with the NN condition. The present study suggests that naps taken during the midnight shift could be useful as a countermeasure to performance decrement and sleepiness on the midnight shift.

Key Words: Air Traffic Control Specialists, Naps, Shiftwork, Night Shift, Performance, Vigilance, Sleepiness, Sleep Quality, Mood
No. of Pages: 36

Report No: DOT/FAA/AM-00/9

Title and Subtitle: Blood carbon monoxide and cyanide concentrations in the fatalities of fire and non-fire associated civil aviation accidents.

Report Date: February 2000

Authors: Chaturvedi, A.K., Smith, D.R., and Canfield, D.V.

Abstract: Postmortem blood samples submitted to the Federal Aviation Administration's Civil Aeromedical Institute (CAMI) from fatal civil aviation accident victims are analyzed for the primary toxic combustion gases carbon monoxide (CO), as carboxyhemoglobin (COHb), and hydrogen cyanide, as cyanide (CN⁻). These analyses are performed to establish possible exposure of victims to smoke produced during in-flight/post-crash fires or to CO leaked into cabin/cockpit from faulty exhaust/heating systems. The presence of both gases in blood would suggest that the victim was alive and inhaled smoke from a fire. If only COHb is elevated, then the accident (or death) could be the result of CO contamination of the interior. Information pertaining to blood levels of the 2 gases in aviation fatalities, in relation to the associated accidents, is scattered or not available, particularly with regard to toxicity. Therefore, considering that COHb 10% and CN⁻ is equal to or greater than 0.25 µg/mL are sufficient to produce some degree of undesired physiological effects, the necessary information was extracted from the CAMI's toxicology database. Biological samples from 3857 fatalities of 2837 civil aviation

accidents, occurring during 1991-1998, were received at CAMI. Out of these, 1012 accidents, encompassing 1571 (41%) fatalities, were fire associated, whereas 1820 accidents were non-fire related. The remaining 5 accidents were of unknown fire status. There were fewer fire-related fatalities and associated accidents in the category wherein COHb is equal to or greater than 10% and CN- is equal to or greater than 0.25 µg/mL than that in the category wherein COHb < 10% and CN- < 0.25 µg/mL. No in-flight fire was documented in the former category, but in-flight fires were reported in 14 accidents (18 fatalities) in the latter category. No fatality under non-fire accidents was found in which the levels of both gases were determined to be at or above the stated levels. There were 15 non-fire accidents with 17 fatalities in which only COHb (10-69%) was elevated, indicating that these accidents were associated with the inhalation of CO of non-fire origin. The present study suggests that the aviation fire accidents/fatalities were fewer than the aviation non-fire accidents/fatalities, with the fact that the fire-associated fatalities had COHb and CN- at levels high enough to produce some degree of impairment/toxicity. Furthermore, the study confirms that aviation accidents related to in-flight fires and to CO-contaminated interiors are rare.

Key Words: Forensic Sciences, Toxicology, Carbon Monoxide, Hydrogen Cyanide, Smoke Toxicity, Fire/Non-Fire Civil Aviation Accidents, Aircraft Accident Investigation

No. of Pages: 13

Report No: DOT/FAA/AM-00/7

Title and Subtitle: The Human Factors Analysis and Classification System-HFACS

Report Date: February 2000

Authors: Shappell, S.A., and Weigmann, D.A.

Abstract: Human error has been implicated in 70 to 80% of all civil and military aviation accidents. Yet, most accident reporting systems are not designed around any theoretical framework of human error. As a result, most accident databases are not conducive to a traditional human error analysis, making the identification of intervention strategies onerous. What is required is a general human error framework around which new investigative methods can be designed and existing accident databases restructured. Indeed, a comprehensive human factors analysis and classification system (HFACS)

has recently been developed to meet those needs. Specifically, the HFACS framework has been used within the military, commercial, and general aviation sectors to systematically examine underlying human causal factors and to improve aviation accident investigations. This paper describes the development and theoretical underpinnings of HFACS in the hope that it will help safety professionals reduce the aviation accident rate through systematic, data-driven investment strategies and objective evaluation of intervention programs

Key Words: Aviation, Human Error, Accident Investigation, Database Analysis

No. of Pages: 18

Report No: DOT/FAA/AM-00/6

Title and Subtitle: Testing the structural integrity of the Air Force's Emergency Passenger Oxygen System at altitude.

Report Date: February 2000

Authors: Garner, R.P., Murphy, R.E., Donnelly, S.S., Thompson, K.E., and Geiwitz, K.L.

Abstract: The chemical bond attaching the elastic neck seal to the body of the protective breathing equipment (PBE) procured by the U.S. Air Force as an emergency passenger oxygen System (EPOS) was alleged to be inadequate to allow the PBE to perform as intended at altitude. To test this possibility, EPOS units were collected from Air Force Bases and systematically tested at altitude. The Civil Aeromedical Institute was requested to participate in the testing through the FAA Office of the Inspector General and the U.S. Air Force's Office of Special Investigations due to the Institute's longstanding expertise in the area of PBE. Eighty-four of the EPOS units collected were divided into four groups of 21. Since the PBE in question were of relatively recent manufacture, three of the four groups were artificially aged. Altitude testing was conducted in a hypobaric chamber at a simulated altitude of 40,000 feet above sea level. An EPOS unit from each of the "aged" groups was placed on one of the four mannequin heads that were instrumented for monitoring pressure, temperature, and atmospheric gas concentrations. The EPOS units were activated at altitude with the primary data collection continuing for a minimum of five minutes after activation. The neck seal/hood interface did not fail on any of the 84 devices during altitude exposure. A destructive test series conducted on an additional 16 EPOS units

indicated that an internal pressure approximately six times that observed at altitude was required to result in structural failure of the EPOS units. Based on the data collected in the performance of these tests, the neck seal/hood body interface bond utilized in the construction of these devices is sufficient to allow the PBE to perform as intended at altitude.

Key Words: Protective Breathing Equipment, Emergency Passenger Oxygen System, High-Altitude Destructive Testing

No. of Pages: 11

Report No: DOT/FAA/AM-00/5

Title and Subtitle: Reduced posting and marking of flight progress strips for en route air traffic control.

Report Date: February 2000

Author(s): Truitt, T.R., Durso, F.T., Crutchfield, J.M., Moertl, P., and Manning, C.A.

Abstract: The new Display System Replacement (DSR) being implemented in air route traffic control centers (ARTCCs) will allow the data-side controller less room to post Flight Progress Strips (FPSs). We tested a new FPS marking and posting procedure designed to reduce the controller's need for, or reliance on, the FPS. The experiment was conducted at Cleveland (ZOB) and Jacksonville (ZJX) ARTCCs utilizing individual controllers and controller teams operating in either high- or low-altitude sectors. Each controller ran two, 30-minute scenarios. Scenarios were counterbalanced, but sample sizes did not allow counterbalancing of conditions. In the Normal scenario, controllers worked as they normally would. During the Experimental scenario, controllers were asked to remove FPSs that were not needed after radar contact and communications were established. Also, FPS marking was not required for any information that was recorded elsewhere, such as via computer entry or landline communication. Controllers responded to the Workload Assessment Keypad (WAK) every 5 minutes while a subject matter expert made performance ratings. Experimenters recorded activity relevant to the plan view display, computer readout device, and FPSs. At the end of each scenario, controllers provided a position relief briefing and completed a

modified version of the NASA Task Load Index. For individuals and teams at ZOB and ZJX, results showed that controllers posted fewer FPSs and marked them less often in the experimental procedure. No detrimental effects on performance, workload, position relief briefings, or team communications were observed. On-line measures of workload (i.e., the WAK) were comparable and sometimes lower for the experimental condition. Most controllers reported that they preferred the experimental procedure.

Key Words: Air Traffic Control, Simulation, Field Study, Flight Progress Strips, Performance Measurement

No. of Pages: 30

Report No: DOT/FAA/AM-00/4

Title and Subtitle: Enhancing GPS receiver certification by examining pilot-performance databases.

Report Date: February 2000

Author(s): Joseph, K.M., and Jahns, D.W.

Abstract: The rapid introduction of Global Positioning System (GPS) receivers for airborne navigation has outpaced the capacity of international aviation authorities to resolve human factors issues that concern safe and efficient use of such devices. Current certification technical standards appear to have had little impact on promoting the design of standardized receiver architectures, interfaces and operating manuals- despite evidence from a variety of sources that lack of standardization may undermine safety. This paper explores the relationship between existing human factors data relevant to GPS-interface design and incident/accident databases, which are a rich source of information and serve to highlight the safety-critical nature of GPS-receiver interface issues. An approach to expanding the role of human factors assessments in the certification of GPS receivers is briefly summarized.

Key Words: GPS Receivers, Certification, Human Factors, General Aviation

No. of Pages: 11