**AAR-100**

**Human Factors Newsletter # 01-11**

**(May 19, 2001 – June 8, 2001)**

**HOCSR:** A research psychologist from the William J. Hughes Technical Center human factors laboratory participated in the Host and Oceanic Computer Replacement (HOCSR) Phase 3 Operational Capability Demonstration (OCD) at the Technical Center. Phase 3 of HOCSR replaces the Direct Access Storage Devices (DASD) at every Air Route Traffic Control Center and provides a monitor and control capability for the new devices. This OCD was a risk-mitigation activity designed to identify operational and human factors issues prior to formal test and deployment. Participants from the field conducted daily and support NAS operations, failure mode operations, and monitor and control operations with the DASD replacement integrated in the system. Together with the participants, the research psychologist identified human-computer interface issues and developed recommendations for improvement. (T. Yuditsky, WJHTC/ACT-530)

**ATC Research Coordination:** Human factors representatives from the William J. Hughes Technical Center (ACT-530 and ACT-510) returned from visiting ATC research centers in Great Britain, The Netherlands, Germany, and France. They met with researchers and technical staff to discuss data collection, data reduction, and data analysis capabilities and how to integrate and synchronize activities. To investigate differences between operations in the European ATC system and in the US, they also visited three operational en route centers in The Netherlands, Germany, and France. (B. Willems, WJHTC)

**Controller-Pilot Data Link Communications (CPDLC):** Human factors researchers visited Lockheed-Martin to learn about the most recent developments in the CPDLC Build IA CHI. A Lockheed-Martin employee briefed the group and demonstrated features of the new CHI. The William J. Hughes Research Center team will emulate the CPDLC Build IA CHI using the Research Development and Human Factors Laboratory simulator for the logical acknowledgments (LACKs) study in September. (R. Sollenberger, WJHTC)

**FAA Vertical Flight Policy Statement**: The administrator recently signed the FAA Vertical Flight Policy Statement. This Statement documents the FAA's intent to fulfill the requirements of AIR 21and the vertical flight elements of Safer Skies. It also covers key elements of the American Helicopter Society International and the Helicopter Association International white paper "Developing a Safe and Efficient Vertical Flight Infrastructure," and the ongoing work of the FAA Research, Engineering and Development Advisory Committee (REDAC). The policy

statement follows. For further information, questions, or comments, please contact William H. Wallace at (202) 267-8212.

## FEDERAL AVIATION ADMINISTRATION
## VERTICAL FLIGHT POLICY STATEMENT

The United States has the finest aviation system in the world. As we enter the 21st century, a major challenge for the Federal Aviation Administration (FAA) will be to maintain its global preeminence in civil aviation in an era of increasing traffic volume and major technological advancements. To meet this challenge, the FAA is modernizing the National Airspace System (NAS) and associated regulations. Central to this effort is the development of the NAS Architecture. Traffic demand in the airway system is expected to grow faster than our ability to provide additional capacity through conventional means. Unless these conditions are addressed expeditiously, the consequences for the air transport industry and traveling public will be higher cost, diminished safety, greater inconvenience, and declining quality of service. Both civil and military aviation are introducing new technology vertical flight aircraft with performance characteristics that are significantly different from existing aircraft, and offer the capability of increasing system capacity. The NAS Architecture will accommodate these new technologies.

Assuring the safe and efficient use of vertical flight technology, accommodating national defense needs, providing system capacity commensurate with demand, and improving emergency and disaster relief services are integral elements of the agency's mission and are essential to carrying out its responsibilities. Modern vertical flight aircraft technology, including advanced rotorcraft as well as tiltrotor aircraft, when coupled with advances in the NAS, offer unprecedented opportunities for aviation system efficiency improvement and will enable safe all-weather transportation and emergency services. Therefore, it is the policy of the FAA to support vertical flight technology development and its use within the NAS through new and broader program initiatives with overall goals to: (1) Improve safety in all aspects of vertical flight operations; (2) Ensure that the NAS has the ability to take maximum advantage of the unique capabilities of vertical flight aircraft; and (3) Ensure that the FAA regulates and certificates vertical flight aircraft, operations, and airmen in a manner that promotes safety, while enabling efficient operations for both fixed-wing and vertical flight aircraft.

To meet these goals, the FAA will, within the NAS, conduct research to assure the safe and efficient operation of vertical flight aircraft, while minimizing the environmental impact on communities. This includes:

- Increasing NAS capacity through simultaneous, non-interfering operations by fixed-wing and vertical flight aircraft.

- Developing vertical flight aircraft separation standards and approach and departure standards commensurate with aircraft and NAS performance.

- Enabling all-weather operations capability for vertical flight aircraft.

- Assuring that regulatory and institutional barriers will not impede implementation of viable

advanced vertical flight aircraft.

- Working closely with industry, the National Aeronautics and Space Administration, and the Department of Defense, as appropriate, to expedite the operational implementation of new vertical flight technology.

- Working with other federal agencies, industry, and state and local governments to assure that vertical flight programs are appropriately executed.

- Conducting systems analysis to assess potential benefits and costs of increased use of vertical flight technology.

- Encouraging the development of heliports and vertiports to improve public transportation and relieve airport congestion.

- Participating in selected vertical flight demonstration programs sponsored by industry or state and local governments.

- Implementing air traffic control, navigation, and instrument approach services for vertical flight aircraft when these services are determined to be beneficial and are supported by system users.

- Working cooperatively with international standards organizations to assure harmonization of NAS standards and vertical flight aircraft and airmen regulatory standards.

The unique capabilities of modern vertical flight aircraft, when combined with strategically located landing facilities and advanced operating procedures, will provide significant opportunities to improve transportation services to the public. The FAA is committed to pursuing these opportunities.

**Aviation Security**:

- On May 16, the Aviation Security Human Factors Program (AAR-510) awarded a 1-year research grant for $121,822 to Dr. Howard Egeth of Johns Hopkins University. Dr. Egeth's research focuses on understanding the factors that control attention during visual search. Specifically, Dr. Egeth will be researching how top-down and bottom-up control combine to determine attentional priority in visual search, and how attention-capturing stimuli (e.g., bag clutter) may serve to camouflage other targets (e.g., real threats). This research has direct implications for understanding the factors that affect target detection during checkpoint screener x-ray operations. (C. George, AAR-1)

- On May 16, the Aviation Security Human Factors Program (AAR-510) awarded a 1-year research grant for $88,777 to Drs.Jason McCarley, Arthur Kramer, and Chris Wickens of the University of Illinois. Their research focuses on understanding the processes that control object recognition during visual search. Specifically, they will be using eye-tracking and behavioral measures to contrast two different theories of object recognition. They will examine the effectiveness of different perceptual properties in guiding top-

down and bottom-up visual search processes, exploring the transfer of skill induced by training, examining the effects of clutter on target search, and examining the effects of image degradation on object recognition. This research has direct implications for understanding factors that affect target detection during checkpoint screener x-ray operations. (C. George, AAR-1)

***More information on human factors research can be found at the FAA Human Factors (AAR-100) web site:*** http://www.hf.faa.gov

Mark D. Rodgers
FAA (AAR-100)


## CALENDAR

**June 17-24, 2001** – Paris Air Show, Le Bourget, France http://www.promosalons.com/

**June 21-22, 2001** – Volpe National Transportation Systems Center National Symposia on Transportation: Education and Workforce, US DOT Volpe Center, Cambridge, MA mailto:brewerl@volpe.dot.gov

**July 8-11, 2001** – ATCA 12th Annual International Technical Conference & Exhibition, Conrad International Hotel, Dublin, Ireland http://www.atca.org/

**August 5-10, 2001 –** 9th International Conference on Human-Computer Interaction, New Orleans, LA http://hcii2001.engr.wisc.edu/

**August 7-8, 2001** – Volpe National Transportation Systems Center National Symposia on Transportation: Enabling Technologies, US DOT Volpe Center, Cambridge, MA mailto:brewerl@volpe.dot.gov

**August 16-19** – Taipei Aerospace Technology Exhibition, Taipei World Trade Centre, Taipei, Singapore http//www.taipeitradeshows.com.tw/etate

**September 4-6**, 2001 – MRO Europe 2001, Scottish Exhibition & Conference Centre, Glasgow, Scotland http://www.aviationnow.com/conferences

**September 10-14, 2001** – Aerospace Congress & Exhibition By Aerospace North America and SAE, Washington State Convention and Trade Center, Seattle, WA mail to:kthomson@sae.org

**September 18-20, 2001** – NBAA Annual Meeting and Convention, New Orleans, LA http://www.nbaa.org/

**October 8-12, 2001** – Human Factors and Ergonomics Society 45th Annual Meeting, Human Factors/Ergonomics: It Works, Minneapolis, MN http://www.hfes.org/

October 14-18, 2001 – Aerospace Expo 2001, Los Angeles Convention Center, Los Angeles, CA
http//www.aviationnow.com/conferences

**October 2001**- Annual Cabin Safety Research Technical Group Meeting, Taj Mahal Hotel and Casino, Atlantic City, NJ

**November, 2001 –** DOD Technical Advisory Group Meeting, San Diego, CA
http://dticam.dtic.mil/hftag/

**November 4-8, 2001 –** ATCA 46th Annual International Program & Exhibits, Washington Convention Center, Wash, D.C. http://atca.org/

**November 27-30, 2001** - The Third International Aviation Security Technology Symposium, Tropicana Resort & Casino, Atlantic City, NJ, sponsored by the FAA Aviation Security R&D Division and National Safe Skies Alliance. Symposium topics include: Trace Detection, Bulk Detection, Human Factors, Technical Integration, Operational Testing and Evaluation, Deployment, Aircraft Hardening, Emerging Technologies, and other related topics.
http://www.safeskiesinternational.org/symposium_2001.htm

**December 3-5, 2001** – MRO Asia 2001, Regal Hotel, Hong Kong
http://www.aviationnow.com/conferences

**December, 2001** – EUROCONTROL Air Traffic Management R&D Seminar, Santa Fe, New Mexico http://eurocontrol.fr/

**September 23-27, 2002** – Human Factors and Ergonomics Society 46th Annual Meeting, Pittsburgh, PA http://www.hfes.org/

April 7-27, 2003 – Aviation World's Fair, Newport News/Williamsburg, VA
http://www.worlds-fair.com/

*Note: Calendar events in Italics are new since the last Newsletter*

Comments or questions regarding this newsletter?
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