



AAR-100

Human Factors Newsletter # 01-03

(January 27, 2001 – February 9, 2001)

- **Special Recognition:** Kenneth Allendoerfer, a human factors researcher at the William J. Hughes Technical Center, received a letter of commendation for his work on the Computer Human Interface (CHI) validation for STARS Full Service-1 conducted at the Technical Center's Human Factors Laboratory in December. The authors, Henry Gonzalez and Alan Feinberg from AUA 300 and AUA 310 respectively, commented that Mr. Allendoerfer's professionalism and attention to detail contributed to the success of the project. They suggested that his performance is a credit to the Technical Center, the Federal Aviation Administration, and the Department of Transportation. (E. Stein, X6389).
- **Test to Assess Screener Skills:** Personnel from the Aviation Security Human Factors and Airport Security Technology Integration programs (AAR-510) met with representatives from Stonehouse Media Incorporated. Stonehouse Media is a small business located in Lawrenceville, New Jersey, specializing in film, video and interactive media. Their interactive media skills include: interface design, graphics and animation, virtual reality creation, and platform testing and delivery. The human factors group is developing an interactive computer-based, networked test to assess screener skills and ability after on-the-job training. Because of their innovative skills with graphics, animation, and virtual reality, Stonehouse Media will be providing technical input with the design and development of the test. (C. George, AAR-1)
- **AT Tower Enhanced Vision Systems:** Researchers from Volpe NTSC visited the air traffic control tower in Providence, RI (PVD) as one step in helping to define preliminary operational requirements for an enhanced vision system for use in towers. The interest in the use of systems that would help controllers "see" through fog and other restrictions to visibility comes from a variety of sources. AAR-100 is working with the Naval Research Laboratory in an investigation of the feasibility of a sensor-based system. There is also interest in determining the feasibility/usefulness of night vision binoculars and monocular devices. Reduced visibility is often a factor in serious runway incursions - such as those that result in accidents. Enhancing the ability of the controller to see aircraft on the airport surface in reduced visibility conditions could prove to be a valuable step in

helping to ensure that such incidents do not result in accidents. (P. Krois, AAR-100; K. Cardosi, Volpe NTSC)

- **AT Publication:** Excerpts from the November 1999 FAA publication, *Human Factors for Air Traffic Control Specialists: A User's Manual for Your Brain*, were reprinted in the Autumn 2000 issue of *Safety Matters*, a publication of the National Air Traffic Services of the Civil Aviation Authority in the United Kingdom. Previously, the Civil Aviation Authority of Ecuador had the entire booklet translated into Spanish for use by ATC personal in Ecuador. (P. Krois, AAR-100; K. Cardosi, Volpe NTSC)
- **Standard Terminal Automation Replacement System (STARS):** Human factors researchers from the William J. Hughes Technical Center (ACT-530) traveled to Raytheon, Marlborough to participate in the Airway Facilities (AF) Computer Human Interface (CHI) Validation for STARS Full Service (FS-1). The goals of the Validation were to demonstrate the Monitor and Control Workstation (MCW) FS-1 CHI, to assess whether 75 issues identified in earlier evaluations have been adequately addressed, and to assess whether FS-1 CHI meets users' expectations for usability & performance. The MCW allows users to monitor the status of equipment, diagnose problems, and take control actions on various resources. User participants completed scripted procedures using the MCW and filled out CHI questionnaires. Participants found that all issues have been, or will be adequately addressed through CHI development, training, or System Trouble Reports. (T. Yuditsky, K. Allendoerfer, WJHTC)
- **Vertical Situation Display:** A human factors researcher from the Volpe NTSC visited Boeing at Renton WA in order to review Boeing's new vertical situation display (VSD). The appearance and behavior of a prototype display was studied during takeoffs, approaches, and landings in an engineering simulator. The VSD features a profile display of the aircraft's track in the lower third of the navigational display (ND). The VSD is designed to be integral to the ND, featuring consistent use of content, color, and symbology. In addition to waypoints and restrictions, the VSD displays a flight path angle, terrain, and a novel speed-capture mark that helps pilots manage energy while in descent. Results of the review are to be included in a report on profile and RNP displays to be delivered to the FAA this Spring. (T. McCloy, AAR-100; M. Zuschlag, VNTSC)
- **Action Plan 12 Meeting:** A technical planning meeting was held at FAAHQ on the FAA/EUROCONTROL Action Plan 12 (Management and Reduction of Human Error in Air Traffic Management). The meeting was attended by representatives from AAR-100, AAT-200, CAMI, EUROCONTROL, NATS/UK, NASA Ames and NASA engineering support. The participants developed a plan to complete the initial definition of the harmonized approach to assess operational errors using an integrated set of causal factors. The group also discussed plans for beta testing this harmonized approach at several FAA facilities and by as many as five or more European states. The participants also discussed the schedule to validate the harmonized taxonomy of causal factors using incident reports resulting from the beta tests. An agenda was developed for the Action Plan 12 Technical Interchange Meeting scheduled for May 10-11, 2001 in Prague. (P. Krois, AAR-100; J. Pounds, CAMI)

- **Human Factors Analysis and Classification System (HFACS):** A meeting was held at FAA HQ to examine reliability data associated with the FAA's use of HFACS with flight deck, maintenance, and air traffic control accidents, incidents, and operational errors. The developers of all three versions of the HFACS frameworks were in attendance, as were representatives from CAMI and AAR-100. Dr. Wiegmann (University of Illinois) presented reliability data associated with the post-hoc analysis of US Navy/Marine Corps Class A accidents, commercial aviation accidents (Part 121 and 135 scheduled), and general aviation (Part 91) accidents using the original HFACS framework. CDR Schmidt (U.S. Naval Safety Center) presented data associated with US Navy/Marine Corps and civilian maintenance accidents using the modified HFACS-ME framework. Dr. Pounds (CAMI) presented preliminary data from the analysis of ATC operational errors using the modified HFACS-ATC framework. Based on the data presented, it was concluded that the original framework and the modified versions demonstrated high inter-rater reliability and would prove useful to the FAA for post-hoc analysis of accidents, incidents and operational errors. Efforts are also underway to develop an HFACS field tool that can be used by maintainers and FAA investigators for human factors accident and incident investigation. (S. Shappell, CAMI)
- **HFACS:** In a continuing effort to collaborate with other DOT agencies, CAMI representatives met with representatives from the Federal Railway Administration's (FRA) Office of Research and Development (Dr. Raslear and Mr. Coplen) and Volpe NTSC (Dr. Sussman) to discuss the implementation of HFACS into the FRA. An initial analysis of railway crossing accidents and a sample of NTSB accident reports is underway. (S. Shappell, CAMI)
- **OPEVAL 3:** A Human Factors researcher from CAMI (AAM-510) participated in an OPEVAL 3 meeting hosted by FedEx, in Memphis, TN, January 22-26. The first two days involved reviewing and editing slides in the "Quick Look Report," a Microsoft Power Point presentation of the preliminary human factors data analyses. The final two days included briefings relating to Operational Evaluation Phase 3 at Memphis International Airport and human factors participation in a tour of the FedEx Complex. (R. Prinzo, CAMI)
- **Austrian Delegation Briefing:** Representatives of the Aviation Security Human Factors Program (AAR-510) briefed members of the Austrian government counter-terrorism and aviation security service. The briefing covered numerous aviation security topics focusing on human operator performance in threat detection and checkpoint operations. (C. George, AAR-1)
- **South Jersey Human Factors Society Elections:** Michael Snyder of the Aviation Security Human Factors Program (AAR-510) was recently elected, by plurality, to the office of president-elect of the South Jersey Human Factors and Ergonomics Society (SJHFES). Mr. Snyder will serve as president-elect in 2001 and as president in 2002. The SJHFES is a technical organization dedicated to collaboration and communication among human factors professionals in the New Jersey/Philadelphia region. The chapter currently has more than 50 members. (C. George, AAR-1)

- **Subjective Image Complexity Software:** AAR-510 authored a white paper presenting possible opportunities to validate the Subjective Image Complexity software. This program (including three measurement scales) was developed by the Defense Evaluation and Research Agency (DERA), the Aviation Security Human Factors Programs' counterpart in the United Kingdom. DERA conducted an initial validation study, but requested other nations to further validate the scales. In addition to subsequent validation, the paper recommends collecting data on three supplementary measures and conducting regression analyses for image complexity. (C. George, AAR-1)
- **Visiting Cognitive Neuroscientist:** AAR-510 personnel hosted Dr. Amishi Jha from Duke University. Dr. Jha is a cognitive neuroscientist working on human attention and visual search, with research experience in x-ray security screener tasks. Dr. Jha is considering participating in the Aviation Security Human Factors Program's long-term research grant initiative. A tour of the Aviation Security Laboratory was provided to learn more about the x-ray screener task, checked bag screening, and AAR-510 research in these areas. This tour has important implications toward the development of long-term cooperative academic research programs and for disseminating knowledge on the research issues and efforts of the Aviation Security Human Factors Program to the academic research community. (C. George, AAR-1)
- **Virtual Reality Researcher Visit:** Dr. Dennis Proffitt of the University of Virginia met with representatives from the Aviation Security Human Factors Program (AAR-510) to discuss potential grant projects. Dr. Proffitt is a cognitive psychologist with expertise in the areas of human visual perception and performance and virtual reality technology. Dr. Proffitt conducts virtual reality (VR) research and was invited to provide technical support for the development of a VR simulation laboratory in the Aviation Security Human Factors Program research laboratory. A tour of the Aviation Security Human Factors facility was conducted to give Dr. Proffitt more detailed information concerning the x-ray screener task, checked bag screening, and AAR-510 research in these areas. This visit has important implications toward the development of long-term cooperative VR research programs, the development of an Aviation Security VR laboratory, and for disseminating knowledge on the research issues and efforts of the Aviation Security Human Factors Program to the academic research community. AAR-510 will pursue a grant with Dr. Proffitt to provide technical advice on the proposed virtual reality laboratory and to conduct research on the benefits of incorporating three-dimensional technology into X-ray and computed tomography user interfaces. (C. George, AAR-1)
- **Contacts with Academic Researchers:** As part of Aviation Security Human Factors Program (AAR-510) long-term research initiative, academic researchers interested in attention and/or object recognition were encouraged to apply for competitive research grants. As of the December 31, 2000, deadline, 10 researchers sent letters of intent outlining potential research proposals. These research proposals describe ideas important for enhancing human factors performance for X-ray screeners. The proposals include studies of visual search and object recognition under degraded conditions. The deadline for the full grant application is February 15. (C. George, AAR-1)

- **General Aviation:** The Aviation Digital Data Service, ADDS, was featured recently in the Transportation Communications Newsletter, as its site of the day. The ADDS site provides comprehensive weather data, in a host of formats, primarily for general aviation pilots. It includes several tools, such as a flight path planner, radar information, satellite reports, PIREPs and a question and answer forum. The site is <http://adds.awc-kc.noaa.gov/>. Even if you don't fly, it's well worth the visit. (B. Berger, AAR-100)
- **Child Passenger Safety:** The DOT Seatbelt Flagship Child Passenger Safety Week will be observed Feb 11-17, 2001. Child Passenger Safety Week information is on the web at: <http://www.nhtsa.dot.gov/people/injury/childps/> (B. Berger, AAR-100)

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

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FAA (AAR-100)



February 22-23, 2001 – 2001 Aviation Maintenance Training Conference, Toulouse, France
<http://www.avex-online.com/>

February 22-23, 2001 – Human Factors for Aviation Technicians Workshop. Atlanta, GA
<http://www.greyowl.com>

March 5-8, 2001 – 11th International Symposium on Aviation Psychology, Columbus, OH
<http://aviation.eng.ohio-state.edu/sympos/11th/index.htm>

March 13-15, 2001 – The Advanced Technology Electronic Defense Systems Conference and The Tactical Situational Awareness Symposium, Shelter Pointe Hotel and Marina on Shelter Island, San Diego, CA [mail to: AssenmacheTJ@navair.navy.mil](mailto:AssenmacheTJ@navair.navy.mil)

March 18-20, 2001 – National Aviation Environmental Conference, Dallas, TX
<http://www.airportnet.org/>

March 21-23, 2001 – International Symposium on Smart Graphics, Hawthorne, NY
<http://www.smartgraphics.org/>

March 27-29, 2001- The Fifteenth Symposium on Human Factors in Aviation Maintenance, The Brewery Conference Centre, London, UK [mail to: enquiries@conference-consultancy.com](mailto:enquiries@conference-consultancy.com)

March 31 – April 5, 2001- CHI 2001, Seattle, WA <http://www.acm.org/chi2001>

April 3-5, 2001 – Maintenance Repair and Overhaul Conference and Exhibition, Dallas, TX
<http://www.aviationnow.com/>

April 8-14, 2001 – Sun ‘n Fun EAA Fly-In, Lakeland, FL <http://www.sun-n-fun.com/>

April 24-26, 2001 – 46th Annual Corporate Aviation Safety Seminar, Orlando, FL
<http://www.nbaa.org/>

April 30-May 2, 2001- Regional Airline Association Convention, Tampa, FL
<http://www.raa.org/>

May 3-4, 2001 – Human Factors for Aviation Technicians Workshop, Long Beach, CA
<http://www.greyowl.com>

May 14-17, 2001 – DOD Technical Advisory Group Meeting, Antler’s Adam’s Mark Hotel, Colorado Springs, CO <http://dticam.dtic.mil/hftag/>

June 3-8, 2001- Society for Information Display, International Symposium, Seminar & Exhibition, San Jose Convention Center, San Jose, CA [mail to: pdrzaic@elink.com](mailto:pdrzaic@elink.com)

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

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://hcie2001.engr.wisc.edu/>

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](mailto: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, Minneapolis, MN <http://www.hfes.org/>

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/>

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/>

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



Comments or questions regarding this newsletter?
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