



AAR-100

Human Factors Newsletter # 01-09

(April 21, 2001 – May 4, 2001)

Situational Awareness: The Chief Scientist for Human Factors and a member of his team participated in an at-sea operational demonstration and test of the US Navy's proposed Tactical Vectoring Equipment (TVE) navigation display while on board the aircraft carrier USS John F. Kennedy (CV-67) and the destroyer USS The Sullivans (DDG-68). Navigating a ship at sea at night in close proximity to another vessel is a dangerous and challenging task for even an experienced ship-handler. Depending on weather conditions and visibility, it can be extremely difficult to determine range, course, speed, and target angle to avoid other ships and maneuver safely. During plane guard operations, an escort ship is positioned 1-3 thousand yards at 175 degrees astern of the aircraft carrier. The escort's mission is to assist with search and rescue operations in the event of an aircraft mishap or man overboard. The ship's crew utilizes voice radio communication, radar and visual navigational aids to maintain proper station and make maneuvering decisions. These visual cues and navigational aids can be ambiguous or late. Naval officers leading these operations (conning officers) can experience situational disorientation with their attention distributed between tracking the aircraft carrier, monitoring radio traffic, searching the ocean for other ships and avoiding navigational hazards. To reduce the loss of situational awareness, it is proposed that a TVE navigation display be mounted on the stern of the aircraft carrier to assist shipboard conning officers when maneuvering in a battle group formation. The TVE will consist of six bi-color red and green lights mounted several feet apart on the stern of an aircraft carrier. Each bi-color light changes based on ships' relative positions. As the escort ship's position changes relative to the aircraft carrier's stern, the light display changes color, indicating approximate degrees off station. Results of the at-sea demonstration indicate that TVE definitely made station keeping easier and reduced bridge team workload. This finding shows that such a device can enhance an observer's understanding of the relative motion between ships and improve a conning officer's situational awareness. (K. Krebs, AAR-100)

SABET: Data collection for SABET (the Study of an ATC Baseline for the Evaluation of Team-configurations) is now complete and analyses are ongoing. SABET studies the multi-sector controller position concept without advanced automation tools. It will form the baseline for future studies that will test the effect of automation in a multi-sector ATC environment on

controller behavior and performance. (B.Willems, WJHTC)

STARS: The William J. Hughes Technical Center's Research, Development & Human Factors Laboratory supported the STARS program in three capacities during a series of activities in April. First, they developed a demonstration of a unique function used at Memphis TRACON when operating simultaneous parallel approaches. Memphis will be one of the next facilities to receive STARS, and resolving this issue is a high priority to the program. Researchers were able to develop the function in less than one week and demonstrated it to Air Traffic, Program Office, and NATCA personnel. Technical Center researchers also hosted an initial meeting to discuss changes to the STARS Monitor & Control Workstation Computer-Human Interface (CHI) as part of the STARS Pre-Planned Product Improvements (P3I). These changes will allow airway facilities personnel to monitor and control links between STARS and external systems such as the Integrated Terminal Weather System (ITWS). The third activity involved hosting the second meeting of the STARS Air Traffic CHI Working Group to discuss changes to the STARS controller CHI which will incorporate the ITWS and other improved weather information. The researchers presented CHI changes requested by the working group at its previous meeting, and also presented CHI prototypes for six additional weather products including storm cell information and wind shear alerts. The STARS P3I CHI development work for both airway facilities and air traffic will be used to create specifications and will lead to deployment to the field in the 2004 timeframe. (K. Allendoerfer, T. Yuditsky, WJHTC)

Operational Error Elimination: Psychologists from AAR-100 and CAMI traveled to the Center for Management Development in Palm Coast, FL to participate in meetings hosted by a steering committee comprised of AAT-20/200 and NATCA concerning initiatives directed toward the elimination of operational errors. Bill Peacock (AAT-1) commented on the importance of efforts at mitigating operational errors and their underlying causal factors. The union agreed to support a beta testing activity at several field facilities involving JANUS, which is the new harmonized model of causal factors underlying operational errors. JANUS is being developed and tested by CAMI and EUROCONTROL through the auspices of Action Plan 12. (P.Krois, AAR-100)

Pilot Training Survey: AAR-100 researchers presented an overview of the Pilot Training Survey project to the ALPA Master Executive Council (MEC) training chairman in April at ALPA headquarters. The MEC participants are union members responsible for labor oversight at air carriers. The survey, which was distributed to approximately 30,000 pilots from 25 air carriers responsible for 99% of the market share in this country, asked pilots for impressions of their training. Data collection is complete and preliminary results will be available later this year. (E. Edens, AAR-100)

ATC Presentations: Three CAMI scientists traveled to Manhattan, Kansas April 20-22 to participate in a regional conference and present papers titled "The Effects of Performance Feedback on Air Traffic Control Team Coordination: A Simulation Study", "Retrospective Human Factors Analysis of ATC Operational Errors", and "A Preliminary Test of Two Models for Human Factors Analysis of Operational Errors". (C. Toby, CAMI)

Human Performance: A CAMI researcher presented a talk entitled “Human Factors, Effects on Safety” at the Annual Alaskan Regional Runway Safety Symposium & Workshop, April 26 in Fairbanks, Alaska. The presentation focused on human factors related to cognitive processing and performance in complex environments, with emphasis on the interaction between perception and experience. Current work to develop a 360-degree human factors investigation technique for runway incursions was also presented. (J. Pounds, CAMI)

Data Link: William J. Hughes Technical Center researchers (ACT-530) are beginning a joint project with ACT-350 and ACT-510 using the power and capability of the simulator Desire to evaluate the need for logical acknowledgements from air to ground for data link messages. Progress reports will be forthcoming. (E. Stein, WJHTC)

Capstone: A CAMI researcher traveled to Anchorage, AK to assist in the development of a Request For Offer (RFO) for Phase II of the Alaska Capstone Program. A part of the Safe Flight 21 Program, the Alaskan Region's Capstone Program is an accelerated effort to improve aviation safety and efficiency through installation of government-furnished Global Positioning System based avionics and data link communications suites in a large number of commercial aircraft in Alaska. Phase II of the program will extend the avionics suite to include a navigation display and a primary flight display that is approved for instrument approaches and that incorporates a Highway-in-the-Sky and Synthetic Vision System display. (K. Williams, CAMI)

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)



May 6-10, 2001 – 72nd Meeting of the Aerospace Medical Association – Emerging Technologies for the New Millennium, Nugget Hotel, Reno, NV <http://asma.org/>

May 7-9, 2001 – Global Air & Space 2001, “Vitality of Aerospace Entering the New Millennium, Hyatt Regency Crystal City, Arlington, VA <http://www.aiaa.org/>

May 14-16, 2001 – Transport Canada Canadian Air Safety Seminar 2001, Westin Ottawa Hotel, Ottawa, Canada <http://www.tc.gc.ca/aviation>

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

May 15-16, 2001 – Volpe National Transportation Systems Center National Symposia on Transportation: Public/Private Partnerships, US DOT Volpe Center, Cambridge, MA <mailto:brewerl@volpe.dot.gov>

May 15-16, 2001 – Aeronautical Systems Center/USAF Research Laboratory/Wright-Patterson AFB National Airspace Systems & Technology Conference, Dayton Convention Center, Dayton, OH <http://nasc-conf.com/>

May 15-17, 2001 – NASA Conference: Aerospace Technology Enterprises – Turning Goals into Reality, Ronald Reagan International Trade Center, Wash, DC <http://aerospace.nasa.gov/curevent/tgir>

May 16-18, 2001 – 10th Annual International Air Cargo Convention, Osborn Convention Center, Jacksonville, FL <http://www.iacc-expo.com/>

May 22-23, 2001 – IQPC Six Sigma for Aerospace Conference, Scottsdale Hilton, Phoenix, AZ <http://www.iqpc.com/1485a>

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/>

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://hcie2001.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](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, *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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