



AAR-100

Human Factors Newsletter # 04-18

September 4, 2004 – September 17, 2004

Technical Note: *Automatic Dependent Surveillance – Broadcast/ Cockpit Display of Traffic Information (CDTI): Pilot Use of Electronic vs. Paper Map Displays During Aircraft Navigation on the Airport Surface* (O. V. Prinzo, CAMI). Note: Presented to the 6th International Conference on Human Error, Safety and System Development.

Abstract: The Federal Aviation Administration is making a concerted effort to reduce runway incursions. A 5-day operational evaluation, conducted in October 2000, assessed pilot use of varying types of CDTI devices. Structured and unstructured taxi routes examined how well pilots navigated their aircraft using an electronic surface-map display (north-up, track-up) or a paper surface map. An analysis of 15 hours of communication data was performed to determine how the use of these displays might aid situation awareness and influence operational communications. Communications involved in progressive taxi routes and routes instructing pilots to follow another aircraft were excluded from analysis. A Type-of-Route x Type-of-Map ANOVA revealed more problems occurred and more messages were exchanged for structured taxi routes. A statistically significant interaction indicated most problems occurred for the north-up map during structured taxi routes and the number of problems encountered was comparable to the other maps when pilots navigated along unstructured taxi routes. When designing electronic surface-map displays, providing a north-up map orientation appears to create more problems than either track-up or paper surface maps — especially when taxi routes are complex (or unfamiliar).

Point of Contact: T. McCloy, ATOP-R&D

Technical Note: *Visual Coding of Status for Airway Facilities Systems* (V. Ahlstrom, R. Muldoon, WJHTC)

Executive Summary: Technical Operations (TO) specialists monitor system status through changes in coding on a display. In the past, coding has been developed on a system-by-system basis with each program coming up with coding rules for an individual system. This has led to inconsistent coding schemas across TO systems in an individual work environment. Inconsistent coding between systems prevents the users from transferring knowledge gained from one system to another system.

This paper provides a framework for the development of status coding. If the process described in this paper is successful, it will promote consistency in the coding of status information across systems. This can reduce the time needed to identify and react to a potential problem, minimizing the potential for outages, and decreasing the impact of outages that do occur.

The first steps in developing appropriate status coding are defining what needs to be coded and describing the environments in which the coding will be used. Status coding for current systems often are developed without consideration of coding conventions already in use in the existing environment. Generally, each program defines the items to be coded and identifies the coding conventions to be used individually. In this paper, we have defined commonly used status terms so that they can be used consistently across TO systems. Additionally, by providing definitions for these terms, programs that use this document can save the time and money normally allocated to defining these terms.

The environment that it is presented in influences the effectiveness of status coding. Environmental issues that can have an impact include the lighting levels of the room, the distance that the items will be viewed at, the brightness levels of monitors near the new system, and even the age of the TO specialists. Often programs develop coding for a system without a clear idea of the environment in which it will exist because a lack of travel funds, time, or manpower. Although this report does not provide all of the information that may be obtained at a site visit, it provides valuable knowledge about the existing environment that assists developers that do not have the ability to see the environment themselves. Additionally, it may bring to the attention of developers items that they may not have considered otherwise.

Finally, this paper defines different coding techniques and provides specific recommendations on how to use these coding techniques appropriately. Some of the specific coding areas that are covered in this paper are: alphanumeric, brightness, flash/blink, highlighting, shape, size, location, and color-coding. The guidelines that are presented here are based on information from the Human Factors Design Standard.

The authors hope that the methods presented in this paper for status coding will promote consistency across TO systems and improve the effectiveness of the coding techniques used in TO systems.

Point of Contact: D. Picicone, ATOP-R&D

Help to Air National Guard: Earl Stein from the William J. Hughes Technical Center's NAS Human Factors Group provided consulting services to the acting base civil engineering officer assigned to the 177th Fighter Wing, New Jersey Air National Guard. The Guard has personnel returning from deployment in Iraq. They have become concerned about the possibility of their personnel developing post traumatic stress syndrome. Apparently there have been some notably poor outcomes from several Air National Guard personnel across the country returning from overseas. While this is not within the usual realm of our work, Earl was able to provide guidance on what to look for in terms of behavior of personnel. He also provided referral information for resources available in southern New Jersey. (Earl Stein, WJHTC)

Shift Work: Dr. Thomas Nesthus (AAM-510) participated in the first multi-agency Shift Work Management Accreditation & Certification Working Group. Representatives from the National Institute of Occupational Health, Department of Justice, National Research Council, Department of Defense, Federal Railroad Administration, and FAA discussed common issues concerning shift working personnel within their respective agencies. Also discussed were current fatigue management programs and the possibility of developing a standard educational approach for managers, supervisors, and schedulers. Dr. Nesthus also participated in the NAS Technical Operations Support Office Human Factors Resource Team meeting where he provided an update on Airways Facilities (AF) research efforts. Dr. Carla Hackworth and Ms. Crystal Cruz (AAM-510) presented their AF research efforts to this team via teleconference. (T. Nesthus, CAMI)

En Route Traffic: Mike McAnulty anticipates that we will begin early shakedown runs for the En Route Traffic Management Advisor study this week at the William J. Hughes Technical Center. The work will determine which format works best for the presentation of metering delay times. The location of the data presentation will include the current method of providing a separate metering list as well as associating time information with the radar target itself. An important outcome will be information concerning factors that influence the pattern and duration of controller scanning behavior. (E. Stein, WJHTC)

Award: The William J. Hughes Technical Center's Annual Peer Awards Program selected Tanya Yuditsky for the "Customer Service Award". Dr Yuditsky's award is based on her work with user teams dealing with design and implementation issues on Enhanced Traffic Management System (ETMS) and Traffic Flow Management. A key contribution was her involvement in helping user teams effectively employ human factors knowledge and principles in their decision processes. Dr Yuditsky's commitment to customer service was recently commended in an e-mail note from the National Air Traffic Controllers Association (NATCA) representative for ETMS at the Command Center to the Vice President for System Operations. NATCA praised the manner in which the latest version of ETMS was deployed. It specifically noted Dr. Yuditsky's contributions in working with the developers at Volpe, the Technical Center ETMS laboratory, the requirements team, Command Center personnel, and the Traffic Flow Management User Team in producing a new software version with many enhancements and new features in the user interface. This letter of appreciation exemplifies Dr Yuditsky's approach to customer service and the level of satisfaction that her/his customers have with her performance. (E. Stein, WJHTC)

Traffic Management: Tanya Yuditsky, from the William J. Hughes Technical Center's NAS Human Factors Group participated in test and evaluation of the National Traffic Management Log (NTML) Version 3.04. The test team, which included specialists from the field and software engineers, exercised the NTML through scripted procedures that represent commonly used functions as well as new capabilities. The tests focused on user-computer interactions and the usability of the computer-human interface. (E. Stein, WJHTC)

Laboratory Visit: On September 14th, Mike McAnulty and representatives from the technical staff at the William J. Hughes Technical Center's Research Development & Human Factors Laboratory briefed visitors from the Department of Defense Transportation Command and MITRE on the human factors program and laboratory capabilities. They also demonstrated en

route and terminal simulations with future functionality, and the virtual reality modeling of terminal radar approach control and tower facilities. (E, Stein, WJHTC)

Call for Nominations for Excellence in Technology Transfer: The Federal Laboratory Consortium (FLC) for Technology Transfer is now accepting nominations for the 2005 Award for Excellence in Technology Transfer. This award recognizes laboratory employees who have accomplished outstanding work in the process of transferring a technology developed by a federal laboratory. Nominations are made by FLC laboratory representatives and judged by representatives from industry, state and local government, academia, and federal laboratories. Simply being nominated is in itself a high honor. Only FLC laboratory representatives may nominate recipients for these awards. FLC laboratory or agency representatives are not eligible to be nominated--nor may they nominate their immediate supervisor. All other laboratory staff are eligible to be nominated. A nomination package is available at <http://ack.tc.faa.gov/ackwhatsnew.html>. If you have any questions about the FLC Awards Program or with the nominations package, please contact Deborah Germak, Technology Transfer Program Manager, at (609) 485-9862, or via e-mail at Deborah.germak@faa.gov. Please submit all nominations to Deborah Germak no later than Friday, October 1, 2004.

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 (ATOP-R&D)



September 20-22, 2004 [AIAA 1st Intelligent Systems Technical Conference](#) Hilton Chicago, Chicago, IL

September 20-22, 2004 - [AIAA 4th Aviation Technology, Integration and Operations \(ATIO\) Forum](#) Hilton Chicago, Chicago, IL

September 20-23, 2004 - [AIAA 3rd "Unmanned Unlimited" Technical Conference, Workshop and Exhibit](#) Hilton Chicago, Chicago, IL

September 20-24, 2004 – Human Factors and Ergonomics Society 48th Annual Meeting, Sheraton New Orleans Hotel, New Orleans, LA <http://www.hfes.org/>

September 27-29, 2004 – SAFE Association 42nd Annual Symposium, Grand America Hotel, Salt Lake City, UT <http://www.safeassociation.com/symposium.htm>

September 28 – October 8, 2004 – ICAO Assembly 35th Session, Montreal, Canada
<http://www.icao.int/icao/en/assembl/a35/index.html>

September 28-30, 2004 - Seventh GAIN World Conference (Global Aviation Information Network), Montreal, Canada. <http://www.gainweb.org>.

September 29 – October 1, 2004 – 2004 International Conference on Human Computer Interaction (HCI-Aero), Toulouse, France
<http://www.eurisco-international.com/hci-aero2004>.

September 29-October 4, 2004 – Aviation North Expo, Fairbanks, AK meadow@acsalaska.net
www.AviationNorth.org

October 4-7, 2004 – SAE SEAT – Aircraft Seat Committee Meeting, Albuquerque, NM
mlemank@sae.org

October 5-7, 2004 – Aircraft Seat Committee Meeting, Albuquerque, NM
mlemank@sae.org

October 5-7, 2004 – International Test and Evaluation Association (ITEA) & Johns Hopkins University Workshop, Baltimore Harbor Holiday Inn, Baltimore, MD

<http://www.skisi.net/fskitea/2004VirtualWorkshop.php>

<https://wx7.registeredsite.com/user845698/pages/eventregform/itea/e/2004e.asp>

October 10-16, 2004 – ACM Multi-Media 2004, New York, NY <http://www.mm2004.org/>

October 11-14, 2004 – User Interface 9 Conference, Cambridge, MA uiconf@uie.com.

October 12-14, 2004 – Shared Vision of Aviation Safety Conference, San Diego, CA
<http://www.aviationsafetyconference.com/index2.html>

October 12-14, 2004 – 57th Annual Business Aviation Association Meeting and Convention, Las Vegas County Convention Center, Las Vegas, NV <http://web.nbaa.org/public/cs/amc/>

October 13-15, 2004 – Sixth International Conference on Multimodal Interfaces, Penn State University, State College, PA <http://www.icmiplace.org/>

October 18-19, 2004 – National Academies Institute of Medicine Annual Meeting, National Academy of Sciences, Washington, DC <http://wwwsearch.nationalacademies.org/>

October 18-20, 2004 – Human Factors in Aeronautics Symposium, NASA-Ames Conference Center, Moffett Field, CA richard.h.mogford@nasa.gov

October 18-22, 2004 – AC-9 Aircraft Environmental Systems Meeting, Wichita, KS
mlemank@sae.org

October 19-20, 2004 – Aerospace Council Meeting, Toulouse, France
mlemank@sae.org

October 21-23, 2004 – Aircraft Owners and Pilots Association Expo 2004, Long Beach Convention and Entertainment Center, Long Beach, CA <http://www.aopa.org/expo/2003/virtual/>

October 23-27, 2004 – NordiCHI 2004, Tampere, Finland <http://www.cs.uta.fi/nordichi2004/>

October 24-27, 2004 – UIST 2004, 17th Annual ACM Symposium on User Interface Software and Technology, Santa Fe, NM <http://www.acm.org/uist/>

October 25-28, 2004 - [7th Annual Systems Engineering Conference](#) Dallas Marriott Quorum, Dallas, TX

October 25-28, 2004 – SAE S-9 Cabin Safety Technical Committee Meeting, San Diego, CA
mlemank@sae.org

October 25-28, 2004 – DoD Maintenance Seminar and Exhibition, Hilton Americas, Houston, TX <http://www.sae.org/calendar/aeromtg.htm>

October 26-28, 2004 – ICAO Security Seminar, Merida, Mexico <http://www.icao.org>

October 27-29, 2004 – Human Factors and Ergonomics Society Europe Chapter Annual Meeting, Delft University, the Netherlands
http://utopia.ision.nl/users/hfesec/meeting/ec_meet.htm

October 27-29, 2004 – S-9 Cabin Safety Technical Committee Meeting, San Diego, CA
mlemank@sae.org

October 31, 2004 – ATCA Annual Conference and Exposition, Marriott Wardman Park Hotel, Wash., DC http://www.atca.org/event_items.asp#

November 1-4, 2004 – DOD Human Factors Engineering Technical Advisory Group Meeting, Holiday Inn Select, Alexandria, VA <http://hfetag.dtic.mil/meetschl.html>

November 2-4, 2004 – World Aviation Conference, Hilton Hotel, Reno, NV
<http://www.sae.org/events/wac/>

November 3-4, 2004 - Second ICAO-IATA LOSA & TEM Conference, Seattle, Wash
dmaurino@icao.int , curt.graeber@boeing.com

November 4-5, 2004 – Royal Aeronautical Society Seminar - Human Factors Training in Aviation Maintenance, RAF Bentley Priory, Stanmore, near Watford, North London
<http://www.raes-hfg.com/xmhfrtraining.htm>

November 7-9, 2004 – Aviation Maintenance Software Technology & Resource Symposium, Pointe South Mountain Resort, Phoenix, AZ <http://www.STARSymposium.com>

November 8-9, 2004 – European Aviation Training Symposium, Vienna, [Austria](http://www.at-events.com/eats/conference.asp)
<http://www.at-events.com/eats/conference.asp>

November 8-10, 2004 – Aerospace Testing Expo 2005 Scientific Conference and Technology Forum, Long Beach Convention Center, Long Beach, CA <http://www.aerospacetesting-expo.com/northamerica/conf+forum.html>

November 12-17, 2004 – American Society for Information Science and Technology Annual Meeting, Providence, RI asis@asis.org

November 13-14, 2004 – Aviation Nation, Nellis AFB, NV www.nellisairshow.com

November 15-18, 2004 – 57th Annual International Air Safety Seminar (“Sharing Knowledge to Improve Safety”), Pudong Shangri-La Hotel, Shanghai, China
<http://www.flightsafety.org/seminars.html>

November 15-18, 2004 – Fire and Cabin Safety Research Conference, Lisbon, Portugal
www.caa.co.uk/srg/intsd/event.asp?groupid=73

November 16, 2004 - FY04 General Aviation, Vertical Flight, and Aviation Maintenance Human Factors Program Review, FAA Headquarters Bessie Coleman Training Center, Wash, DC <mailto:william.krebs@faa.gov>.

November 18-19, 2004 – IT World Expo, Toronto, Canada richardp@WowGao.com

November 18-21, 2004 – 45th Annual Meeting of the Psychonomic Society, Hyatt Regency and Millenium Hotels, Minneapolis, MN [45th Annual Meeting of the Psychonomic Society](http://www.psychonomic.org)

January 9-12, 2005 – International Conference on Intelligent User Interfaces, San Diego, CA
<http://www.catamaranresort.com/>

January 9-13, 2005 – TRB 84th Annual Meeting, Washington, DC <http://trb.org/calendar/>

January 10-13, 2005 - 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV <http://www.aiaa.org/>

January 25-27, 2005 – AE-2 Aerospace Lighting Committee Meeting, New Orleans, LA
elizd@sae.org

January 28, 2005 – Deadline for papers - 6th USA/Europe ATM Seminar, Baltimore, MD, June 2005 <http://atmseminar.eurocontrol.fr/>

April 2-7, 2005 – CHI 2005, Portland, OR chi2005-chair@acm.org.

April 11-15, 2005 – SAE 100th Anniversary World Congress, Cobo Hall, Detroit, MI
<http://www.sae.org/congress/about/news/congressdates.htm>

April 17-22, 2005 – International Federation of Air Traffic Controller's Associations, Melbourne, Australia http://www.ifatca.org/conferences/annual_conference.htm

April 18-21, 2005 – 13th International Symposium on Aviation Psychology (ISAP), Civil Aerospace Medical Institute (CAMI), Oklahoma City, OK (note: call for papers deadline is September 30, 2004). <http://www.cami.jccbi.gov/>, <http://www.wright.edu/isap/>

May 9-12, 2005 - 76th Annual Scientific Meeting of the Aerospace Medical Association, Kansas City, MO <http://www.asma.org/>

June 2005 – 6th USA/Europe ATM Seminar, Baltimore, MD (note: call for papers deadline is January 28, 2005) <http://atmseminar.eurocontrol.fr/>

July 22-28, 2005 – HCI International 2005, 11th International Conference on Human-Computer Interaction, Caesars Palace, Las Vegas, NV hci2005@ecn.purdue.edu

August 15-18, 2005 - 43rd AIAA Aerospace Sciences Meeting and Exhibit, Hyatt Regency San Francisco at Embarcadero Center, San Francisco, CA <http://www.aiaa.org/>

August 18-21, 2005 - 113th Convention of the American Psychological Association, Wash, DC
<http://www.apa.org/convention>

September 12-16, 2005 – Interact 2005, Tenth IFIP TC13 International Conference on Human-Computer Interaction, Rome, Italy <http://www.interact2005.org/>

September 25-28, 2005 - 11th Ka and Broadband Communications Conference and 23rd AIAA International Communications Satellite Systems Conference 2005 (organized by IIC), Aurelia Convention Center, Rome, Italy <http://www.aiaa.org/>

September 26-28, 2005 - AIAA 5th Aviation, Technology, Integration, and Operations Forum (ATIO), Hyatt Regency Crystal City, Arlington, VA <http://www.aiaa.org/>

September 26-28, 2005 - AIAA 2nd Intelligent Systems Conference (IS), Hyatt Regency Crystal City, Arlington, VA <http://www.aiaa.org/>

September 26-30, 2005 – Human Factors and Ergonomics Society 49th Annual Meeting, Royal Pacific Resort at Universal Orlando, Orlando, FL <http://hfes.org/meetings/menu.html>

October 3-6, 2005 – SAE 2005 AeroTech Congress and Exhibition, Gaylord Texan Resort and Convention Center, Dallas/Fort Worth Airport Area, Texas
<http://www.sae.org/events/conferences/aerospace/>

October 24-25, 2005 – National Academies Institute of Medicine Annual Meeting, National Academy of Sciences, Washington, *DC* <http://wwwsearch.nationalacademies.org/>

January 9-12, 2006 - 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV <http://www.aiaa.org/>

January 22-26, 2006 – TRB 85th Annual Meeting, Washington, DC <http://trb.org/calendar/>

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



Comments or questions regarding this newsletter?
Please contact Bill Berger at (334) 271-2928
or via e-mail at [bill.ctr.berger @faa.gov](mailto:bill.ctr.berger@faa.gov)

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