



AAR-100

Human Factors Newsletter # 03-16

September 13, 2003 – September 26, 2003

FAA Research Grant to St. Louis University: Development of Guidelines and Tools for Effective Implementation of an Aviation Safety Action Program (ASAP) for Aircraft Maintenance Organizations

The primary purpose of an Aviation Safety Action Program (ASAP) is to identify and correct adverse safety events that would otherwise not be likely to come to the attention of the Federal Aviation Administration (FAA) or company management. As of May 6, 2003, there are twenty-eight airlines that operate ASAPs for pilots, but there are only six ASAP MOUs for aircraft maintenance mechanics. Of the six maintenance ASAPs, most are considered by all stakeholders to be highly effective. Because of the potential benefits to safety, a major interest of the FAA is to determine whether the failure of ASAPs to expand to multiple operators as rapidly for aircraft maintenance as it has for pilots is attributable to FAA's ASAP policy, or to other factors beyond the control of the FAA.

Initially, this research project will focus largely on data collection in three steps: (a) focus-group discussions to identify the most important issues concerning maintenance ASAPs; (b) survey questionnaire development and administration to "quantify" the relative importance of success/failure factors, and to streamline the definitions of terms such as "inadvertent errors," "negligence," "at-risk behaviors," etc.; and (c) one-on-one interviews with a representative sample of members from management, labor, and the FAA to further develop the understanding of success/failure factors and to document the best practices. Next, the emphasis will be on data analysis. Data contained in specific ASAP reports and the associated corrective-action recommendations will be analyzed. Available error-classification taxonomies will be tested for applicability in the categorization of ASAP data. Emphasis will be placed on the ability to correlate the errors or error-producing conditions with the corresponding corrective-action recommendations. The data analysis task will be followed by the Web-based tool development task. A second round of focus-group discussions will be conducted to determine the information needs of various user groups involved in maintenance ASAP. These needs, as well as anonymity and confidentiality issues, will be considered while developing the prototype Web-based ASAP safety-information and program-tracking (WASP) tool. The focus will be on developing a functional and usable product based on good principles of human computer interface design and continual testing with user groups (maintenance personnel from team partner facilities as well as

FAA maintenance inspectors). Security issues will be tested and demonstrated on the FAA's secure server. These tasks include extensive testing and iterative revisions to the WASP tool. In the final part of this project, emphasis will be on (a) development of comprehensive and consensual industry recommendations regarding maintenance ASAP programs and (b) development of two sets of guidelines—one for the development of new ASAP programs by additional companies and one to address the challenge of communicating ASAP-derived correction actions and recommendations to the larger maintenance community.

The goal of this research project is to provide a comprehensive analysis of the Maintenance ASAP program in the United States, including the analysis of factors that contribute toward the success/failure of such programs and the development of a Web-based safety-information communication and tracking system.

Grant Technical Monitor: Kip Krebs, AAR-100

Evaluation of Broadband Applications in Aviation Maintenance: The FAA is interested in determining the extent to which human-centered design contributes to the successful application of emerging technologies that include, but are not limited to: training-on-demand, video-on-demand, and wireless access to technical documentation. In particular, how do state-of-the-art of broadband applications affect maintenance operations? Nicole Nelson/CAMI visited the Goodrich ATS to gather information for the development of a survey. The survey will be used to measure organizational issues and attitudes to determine the effects of broadband technologies on aviation maintenance personnel performance. (N. Nelson, CAMI)

Congressional Activities: David Kerr, who spent a year as a legislative fellow on Capitol Hill, is now back at the FAA and writes a weekly update for the Office of Research & Acquisitions (ARA) management team on what's happening on the Hill. The report gives you a good sense of what's happening — in layman's language — and insights as to why. You can find his comments as a regular feature on the front page of the VOICE site. Check it out at <http://voice.faa.gov/voice.nsf/ARAMTCongUpdate>

JANUS: Nancy Baxter (AAM-500) attended a Virtual Basic.Net programming course in Dallas, Texas during the week of Sept 15th-19th. This training was taken to facilitate conversion of the original Windows version of the FAA-JANUS software to a Web-based version. The Windows version was used for the initial field *beta test* of FAA-JANUS. FAA-JANUS is a human factors technique to better understand causal factors in operational errors. The technique was developed specifically for the FAA air traffic environment and tested in concert with FAA air traffic control personnel. The Web-based data collection tool is being developed by CAMI. (J. Pounds, CAMI)

National Research Council Resident Research Post Doctoral Associate Program

The Civil Aerospace Medical Institute, in conjunction with the National Research Council (NRC), has its first two NRC Post Doctoral Associates. Their research programs are at the leading edge of human research that can be applied to civilian aerospace activities. (J. Whinnery, CAMI)

- Applied Functional Genomics Research:** Dr. Hua Zhu’s program entitled “Circadian Desynchronization and Gene Expression Patterns - A Clinical Model of Fatigue” is investigating physiological stress due to circadian desynchronization. Fatigue can be a consequence of a sleep-deprived condition and can lead to performance deficits that contribute to accidents. Results from this study will provide insight for analyzing the human aspect of accidents associated with fatigue as a consequence of jet lag, rotating shifts, working overtime, or other stress conditions. Aimed at understanding the molecular basis of fatigue, this research is important for implementing rational interventions to overcome the effects of fatigue, thereby assisting the FAA in its efforts to maintain safe and effective aerospace operations. Dr. Hua Zhu was a research scientist at the Center for Advanced Genomic Research (Norman, OK) where she studied the *human clock*, its regulation, and *clock-controlled genes*. Dr. Zhu joins the Aeromedical Research Division as the first NRC fellow in the history of CAMI and the FAA.
- Civilian Space Medicine:** In 2002, the Associate Administrator for Commercial Space Travel (AST) requested support from the Office of Aerospace Medicine to assist in the development of medical, cabin environment and life support equipment licensing guidelines for commercial manned space travel. In support of this effort, AST provided funding for a National Research Council (NRC), postdoctoral research position to assist CAMI in the development of minimum requirements for environmental control and life support systems on manned commercial reusable launch vehicles. The objectives for this effort are to develop guidelines that will eliminate or minimize factors that could result in an in-flight medical emergencies or a fatality, or factors that compromise the health and safety of any occupant. The focus of these guidelines is to support aerospace safety and the implementation and growth of the manned commercial space transportation industry. Dr. Arnold Angelici was selected as the NRC research associate, and started work at CAMI in August 2003. It is expected that the final product of this research will be a comprehensive report that provides guidance and recommendations to the FAA for potential licensing that is supported by accepted research data.

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)



October 5-8, 2003 - Institute of Electrical and Electronics Engineers (IEEE) International Conference on Intelligent Control, Houston, TX <http://vlab.ee.nus.edu.sg/~isic2003/>

October 5-8, 2003 - 2003 IEEE International Conference on Systems, Man, and Cybernetics, Washington, DC http://becat.engr.uconn.edu/IEEE_CSMC_2003/

October 6 – 9, 2003 - NATO Research and Technology Agency, Applied Vehicle Technology Panel (AVT) will present "The Vehicle Propulsion Integration Symposium" in Poland. For more information contact cheynes@rta.nato.int

October 7 – 9, 2003 - National Business Aviation Association Annual Meeting & Convention, Orlando, Florida. Contact: www.nbaa.org

October 13-17, 2003 – Human Factors and Ergonomics Society 47th Annual Meeting, Adams Mark Denver Hotel, Denver, CO <http://www.hfes.org/>

October 15, 2003 – Royal Aeronautical Society Conference on Mitigating Human Error, London UK <http://www.aerosociety.com/homepage.asp>

October 17-19, 2003 – EUROCONTROL IFATCA European Regional Meeting, Porto <http://www.eurocontrol.be/newsroom/events/index.html>

October 19-21, 2003 – IEEE Symposium on Information Visualization, Doubletree Hotel, Seattle Airport, WA <http://infovis.org/infovis2003/>

October 21-23, 2003 – 7th IEEE International Symposium on Wearable Computers, Crowne Plaza Hotel, White Plains, NY <http://www.cc.gatech.edu/ccg/iswc03/>

October 26-30, 2003 – ATCA 48th Annual International Technical Program and Exhibits, Marriott Wardman Park Hotel, Wash, DC http://www.atca.org/static2_item.asp?item_ID=19

October 27-28, 2003 – National Academies Institute of Medicine Annual Meeting, National Academy of Sciences, Washington, DC <http://wwwsearch.nationalacademies.org/>

October 27-30, 2003 – SAE DoD Maintenance Symposium and Exposition, Valley Forge Convention Center, King of Prussia, PA <http://www.sae.org/calendar/aeromtgs.htm>

October 28-29, 2003 – Human Performance 2003 – Driving Progress in Individual and Team Performance, Houston, TX <http://advtech.jsc.nasa.gov/humanperf.asp>

October 28-29, 2003 – Airbus Human Factors Symposium , New York City, NY
<http://www.airbus.com/customer/events.asp>

November, 2003(tentative) – DOD TAG-50, Fall 2003, Phoenix, AZ
<http://hfetag.dtic.mil/meetschl.html>

November 4-5, 2003 – NASA/FAA Operating Documents Workshop VI: Updating your Data – The Future of Revisions. Orlando Airport Marriott Hotel, Orlando FL. <http://human-factors.arc.nasa.gov/opdoc-workshopV/>

November 4-6, 2003 – People in Control, 2003 – An International Conference on Engineering Human Factors Solutions, Hilton Amsterdam <http://conference.iee.org/pic2003/>

November 5-6, 2003 – Royal Aeronautical Society Flight Simulation Group Conference on “Simulation of the Environment”, London, UK <http://www.raes.org.uk/homepage.asp>

November 5-7, 2003 – ICAO-IATA Line Operation Safety Audit & Threat and Error Management Conference, Great Southern Hotel, Dublin, Ireland <mailto:sladenj@iata.org>, <mailto:dmaurino@icao.int>

November 5-7, 2003 – FAA Centers of Excellence 3rd Joint Annual Meeting, Daytona Beach Hilton Oceanside Resort, Daytona Beach, FL http://www.embryriddle.edu/research/FAA_COE_Meeting/index.html

November 5-7, 2003 – 5th International Conference on Multi-Modal Interfaces, Marriott Vancouver Pinnacle Hotel, Vancouver, British Columbia, Canada <http://www.acm.org/uist/>

November 10-13, 2003 – 56th Annual International Air Safety Seminar, J.W.Marriott Hotel, Wash, DC <http://www.flightsafety.org/seminars.html#iass>

November 17-20, 2003 – 56th Annual Air Safety Seminar, A Joint Meeting of Flight Safety Foundation, International Federation of Airworthiness, and International Air Transport Association, Bangkok, Thailand <http://www.flightsafety.org/seminars.html>

November 17-22, 2003 – Airbus A300/A310 Technical Symposium, Seville, Spain <http://www.airbus.com/customer/events.asp>

December 1-4, 2003 – International Symposium on Human Factors in Telecommunications, Berlin, Germany http://impcs3.hhi.de/HFT/HFT_03.htm

December 2-4, 2003: National Training Systems Association Inter-Service/Industry Training, Simulation and Education Conference (I/ITSEC), Orlando, FL <http://www.trainingsystems.org>

December 3-5, 2003 – FAA System Engineering Annual Workshop with Information Systems Security – Meeting Real World Challenges, Holiday Inn, Atlantic City, NJ <http://se-iss.tc.faa.gov>

December 9-12, 2003 - Institute of Electrical and Electronics Engineers (IEEE) Decision and Control Conference, Maui, HI <http://www2.acae.cuhk.edu.hk/~ycliu/cdc03/>

December 12-13, 2003 – Workshop on HCI Research in MIS, Seattle, WA http://melody.syr.edu/hci/pre_icis03_wksp/index.cgi

January 11-15, 2004 – Transportation Research Board Annual Meeting, Washington, DC <http://www4.trb.org/trb/annual.nsf>

January 13-16, 2004 – International Conference on Intelligent User Interfaces/Computer-Aided Design of User Interfaces, Island of Madeira, Portugal <http://www.iuiconf.org/>

January 18-22, 2004 – Conference on Visualization and Data Analysis, San Jose Marriott and San Jose Convention Center, San Jose, CA <http://vw.indiana.edu/vda2004/>

January 21 – 23, 2004 - AHS 4th Decennial Specialists' Meeting on Aeromechanics, Fisherman's Wharf, San Francisco, CA. For more information contact the Technical Chairman, Tom Maier at tmaier@mail.acr.nasa.gov

March 15-17, 2004 – 16th Annual European Aviation Safety Seminar, Barcelona, Spain
http://www.flightsafety.org/eass04_cfp.html

March 22-24, 2004 – Eye Tracking Research and Applications Symposium, Menger Hotel, San Antonio, TX <http://www.e-t-r-a.org/>

March 22-25, 2004 – HPSAA II Conference, Human Performance, Situation Awareness, and Automation Technology, hosted by Embry-Riddle Aeronautical University and the University of Central Florida, Hilton Oceanfront Resort, Daytona Beach, FL
<http://faculty.erau.edu/vincenzd/hpsaa>

March 23-26, 2004 – 4th International Workshop on Smart Appliances and Wearable Computers, Tokyo, Japan <http://www.unl.im.dendai.ac.jp/IWSAWC/>

April, 2004 – SAE General Aviation Technology Conference and Exhibition, Century II Convention Center, Wichita, KS <http://www/sae.org/calendar/aeromtgs.htm>

April 18-21, 2004 – FAA Worldwide Airport Technology Transfer Conference, Hilton Atlantic City Hotel, Atlantic City, NJ <http://www.airtech.tc.faa.gov/att04/>

April 24-29, 2004 – CHI 2004, Conference on Human Factors in Computing Systems, Vienna, Austria <http://www.acm.org/sigchi/chi2004/>

April 27-29, 2004 – 49th Annual Corporate Aviation Safety Seminar, Tucson, AZ
http://www.flightsafety.org/cass04_cfp.html

May 3-6, 2004 – 75th Annual Scientific Meeting of the Aerospace Medical Association, Egan Convention Center, Anchorage, AK <http://www.asma.org/>

May 6-8, 2004 - AHS International 60th Annual Forum and Technology Display, Virginia Beach, VA. Contact Staff@vtol.org

May 10-12, 2004 – Royal Aeronautical Society 10th AIAA CEAS Aeroacoustics Conference, Manchester Town Hall, UK <http://www.aerosociety.com/homepage.asp>

May 26-27, 2004 – Royal Aeronautical Society Conference – Flight Simulation 1929-2029, A Centennial Perspective, London, UK <http://www.aerosociety.com/homepage.asp>

July 27-August 2, 2004 – 52nd Annual AirVenture, Oshkosh, WI <http://airventure.org/>

July 28 – August 1, 2004 – 112th Convention of the American Psychological Association. Honolulu, Hawaii <http://www.apa.org/convention>

August 1-4, 2004 – Designing Interactive Systems, Cambridge, MA
<http://www.sigchi.org/DIS2004/>

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

October, 2004 – 18th Airbus/JetBlue Human Factors Symposium, New York City, NY
<http://www.airbus.com/customer/events.asp>

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

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

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

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

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

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



Comments or questions regarding this newsletter?
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