



AAR-100

Human Factors Newsletter # 03-15

August 27, 2003 – September 12, 2003

FAA Research Grant to The Research Foundation of the State University of New York

A number of recent accidents have again emphasized the importance of inspection reliability to aviation safety. One potentially key aspect of reliability is the effect of long continuous working times of inspectors. Such extended time periods could cause a vigilance decrement and/or fatigue in inspectors, leading to reduced defect detection performance. This may be particularly apparent under conditions of highly repetitive tasks and darkened conditions, typical of fluorescent penetrant and magnetic particle inspection tasks. This proposal seeks quantitative evidence as to whether this phenomenon exists for fluorescent penetrant inspection (FPI) or magnetic particle inspection (MPI), and produces a Best Practices Guide for airlines and other users to address these issues.

A two-phased approach is proposed. Phase I sets up the conditions and materials for formal experimentation while Phase II uses a two-step methodology to run the experiments. The first step in Phase II is a multi-factorial screening experiment, which is used to design the subsequent parametric experiments in Step 2.

Phase I begins with a review of the relevant literature, beyond the review performed for this proposal. A number of site visits are used to address environmental and temporal conditions of inspection. Current survey data on hours of work will be used to supplement the site data to ensure realistic conditions for experimentation. In Phase I, the experimental materials (typically component defects) will be assembled. Phase I will produce a report on the study.

In Phase II, the screening experiment will measure probabilities of hit and false alarm, plus time taken per item for a large number of factors. The task will take 1-3 hours, with or without breaks, in light and dark conditions and with different types and probabilities of defects. Mental workload of inspectors will be measured with standard scales (e.g. NASA/TLX). A report on this study will be produced. Any significant factors or interactions will be explored further in a series of parametric experiments. The final report will be supplemented by a Best Practices Guide.

Grant Technical Monitor: Kip Krebs, AAR-100

Human Factors Design Standard: (Editor's note: this message was received from a university researcher). "Bravo for your excellent new Human Factors Design Standards document. I am immediately putting references and links into the draft of my 4th edition of Designing the User Interface (www.awl.com/DTUI4). I found your analysis thoughtful and more complete than other sources. I like your courageous statement of standards, rather than guidelines. Readability of the six level hierarchy is tough, but the tight organization makes this a valuable and different kind of document that complements other instructional materials. I especially liked Chapter 3 and its strong emphasis on putting users in control - I continue to battle with promoters of autonomous agent notions who emphasize machine intelligence/decisions with inadequate attention to user control, feedback to operators, and human responsibility. I encourage you to disseminate your HFDS widely and make people aware of its existence and contents. For example, I suggest you send an announcement to chi-announcements@acm.org to reach a thousand key people and lists within the SIGCHI community." (E. Stein, WJHTC)

Accident Investigation: Thomas Nesthus (AAM-510) participated in the Annual International Society of Air Safety Investigators seminar August 26-28, 2003. Twenty-five speakers presented technical information concerning aviation safety, accident investigation procedure & technique, and preventive measures to a record 450 attendees. Keynote presentations were provided by The Honorable Ellen Engleman, Chairman, NTSB; Paul-Louis Arslanian, Head of the BEA (the French Aviation Accident Investigation Bureau), France; The Honorable Marion Blakey, Administrator, FAA; John Carr, President, NATCA; Rob Graham, Director Safety Investigations, Australian Transport Safety Bureau; and Col. Marcus de Costa, Head of Accident Investigation, Brazil. Notable among the attendees was 101 year-old Jerome F. Lederer, "Father of Aviation Safety" and founder of the Flight Safety Foundation. (T. Nesthus, CAMI)

Program Review: The University of Nevada-Reno Psychology Department hosted the Federal Aviation Administration's Human Factors Research and Engineering Division FY03 Aviation Maintenance, General Aviation, and Vertical Flight program review on September 10-11, 2003. Dr. Michael Crognale, Associate Professor at the University of Nevada-Reno and AAR-100 grantee, hosted the successful two-day meeting. Over twenty researchers and FAA sponsors attended the meeting to review FY03 projects, identify future research requirements, and exchange ideas. To obtain copies of the papers presented at the meeting, point to <http://www.hf.faa.gov/FY03%20Program%20Review.htm>. Overall, the attendees found the meeting very productive and suggested a similar venue next year. (W. Krebs, AAR-100)

Air Traffic Management: Tanya Yuditsky/ACB-220 traveled to the MITRE Center for Advanced Aviation System Development (CAASD) to attend a briefing on the Collaborative Routing Coordination Tool (CRCT). Several traffic management functions from CRCT have already been integrated into the Enhanced Traffic Management System (ETMS). The next CRCT function to be implemented will be reroute modeling. The MITRE team described and illustrated how CRCT performs reroute modeling and described some of the feedback they have received about this function during CRCT evaluation activities. (E. Stein, WJHTC)

*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)



September 15-17, 2003 – FAA/TCA/CAA Safety Management in Aviation Maintenance Symposium, Toronto, Canada

September 16 – 18, 2003 - 29th European Rotorcraft Forum, Friedrichshafen, Germany. Contact B. Gmelin at bernd.gmelin@dir.de

September 16-18, 2003 – MRO Europe, Cardiff International Arena, Cardiff, Wales
<http://www.awgnet.com/conferences/meumain.htm>

September 16-19, 2003 – Investigation and Reporting of Incidents and Accidents (IRIA), Williamsburg, VA <http://shemesh.larc.nasa.gov/iria03/>

September 17-18, 2003 – FAA Research, Engineering and Development Advisory Committee (REDAC) Meeting, Washington, DC <mailto:gloria.dunderman@faa.gov>

September 17-19, 2003 – 3rd Air Cargo Economics Conference, Sheraton Amsterdam Airport Hotel & Conference Center, Netherlands
<http://www.euroavia.com/conf/default.html>

September 17-21, 2003 - Institute of Electrical and Electronics Engineers (IEEE) 25th Annual Engineering in Medical and Biology Society International Conference, Cancun, Mexico
<http://itzamna.uam.mx/cancun/>

September 18-19, 2003 – National Academy of Engineering 2003 Frontiers of Engineering Symposium, Irvine, CA [Welcome to the National Academy of Engineering \(NAE\)](http://www.nae.org/Welcome_to_the_National_Academy_of_Engineering_(NAE))

September 22-24, 2003 - 41st Annual SAFE Symposium, Jacksonville, FL
<http://www.safeassociation.org/2003symposium1.htm>

September 22 – October 3, 2003 – ICAO 11th Air Navigation Conference, Montreal, Canada
<http://www.icao.int/icao/en/anb/meetings/anconf11/index.html>

September 24-25, 2003 –IATA/ICAO/Flight Safety Foundation ICARUS Committee/University of Texas LOSA Meeting, Montreal, Canada <mailto:helmreich@mail.utexas.edu>

September 24-26, 2003 - Institute of Electrical and Electronics Engineers (IEEE) International Symposium on Technology and Society, Amsterdam, The Netherlands

<http://radburn.rutgers.edu/andrews/projects/ssit/istas03.pdf>

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/aeromtg.htm>

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

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 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/>

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 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?
Please contact Bill Berger at (334) 271-2928
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