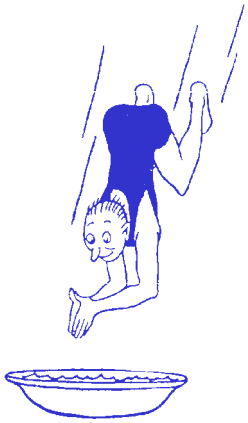

Issue 2 – 11 June 2002

SPLASHER

Starting **P**oint to **L**earn **A**bout **S**afety and **H**uman **E**rror **R**isks

Produced by Joint Aviation Authorities (JAA)
Human Factors Steering Group (HFStG)

For electronic version with hot links see http://www.hfstg.org

In 85% of all aviation accidents, human error has been involved.[1] There are many different human roles that exist in the aviation world; such as pilots, designers, ground staff, maintenance, air traffic controllers and regulators. The human contribution is essential but can be vulnerable to error and safety risk. What can be done to manage this risk? The Joint Aviation Authorities (JAA) Human Factors Steering Group (HFStG) has produced a list of examples of useful Human Factors (HF) material. These examples are not necessarily the "most recommended" and the list is by no means exhaustive. This information has been selected and grouped so that you may easily identify material that is directly relevant to you. The hot links provide ready access to the information. So, take the plunge and use this

Starting Point to Learn About Safety and Human Error Risks

GENERAL

Introduction to Human Factors

- CAP 719 Fundamental Human Factors Concepts (ICAO Human Factors Digest 1), UK CAA, Feb 2002. *See http://www.caa.co.uk/docs/33/CAP719.pdf*
- ICAO Human Factors Digest Series (Topics covered include Flight Crew Training, Flight Deck Automation, Accident Investigation, ATC, Maintenance and Inspection).**
- Human Error, J Reason, Cambridge University Press, 1990
- Human Factors in Flight, F Hawkins, Ashgate, 1993
- Human Factors Handbooks, Transport Canada, Jan 1997. *Order form can be found at http://www.tc.gc.ca/aviation/general/human/brochure/form.htm*

Organisation

- Managing the Risks of Organisational Accidents, J Reason, Ashgate, 1997
- Aviation: Making a Safe System Safer, FSF/IATA/AFA Proceedings, Nov 16-19 1998

Accident Analysis

- CAP 681 Global Fatal Accident Review 1980-1996, UK CAA, March 1998.*
- Statistical Summary of Commercial Jet Airplane Accidents, Boeing Commercial Airplanes Group, Jun 2001. *See http://www.boeing.com/news/techissues/pdf/2000_statsum.pdf*
- CAP 667 Review of General Aviation Fatal Accidents 1985-1994, UK CAA, Mar 1997. *
- Helicopter Safety Review, David Learmount, Flight International, 24-30 Apr 2001
- Human Factors in Fatal Aircraft Accidents, Australian Transportation Safety Board, Apr 1996. See *http://www.atsb.gov.au/aviation/sdi/hffaa.cfm*

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[1] Testimony Before the US House of Representatives Committee on Transportation and Infrastructure Subcommittee on Aviation by Stuart Matthews, President and CEO Flight Safety Foundation, July 27, 2000

* CAPs available from Westward Documedia, tel: +44 (0) 1242 235151. Prices range from £2-£15 + p&p

** ICAO Catalogue can be viewed at http://www.icao.int/icao/en/sales.htm

General Training Courses

- European Association for Aviation Psychologists (EAAP) run approximately two Human Factors in Aviation courses a year. *See http://www.eaap.net/courses.htm*
- Directory of Human Factors Graduate Programs in the United States and Canada, 2000 Ed, Human Factors and Ergonomics Society. *See http://www.hfes.org/publications/gradschools.html*

Links

The following websites have a selection of reports, articles, conference details, video lists and links to other sources of information:

http://www.raes-hfg.com ..... *Royal Aeronautical Society (RAeS) HF Group*
http://www.gainweb.org ..... *Global Aviation Information Network*
http://www.flightsafety.org ..... *Flight Safety Foundation*
http://hfskyway.faa.gov ..... *FAA HF in Aviation Maintenance and Inspection*
http://www.hf.faa.gov ..... *FAA HF Division*
http://human-factors.arc.nasa.gov ..... *NASA HF Research and Technology Division*
http://flightdeck.ie.orst.edu ..... *Flight Deck Automation Issues*
http://www.ashgate.com ..... *Publisher of Aviation HF Literature*
http://www.tc.gc.ca/aviation/syssafe/asvideos_e.htm ..... *Transport Canada*
http://www.marss.org/ ..... *Aviation Maintenance and Ramp Safety Society*

MANUFACTURERS

Design - Flight Decks

- Human Factors Aspects of Flight Deck Design - Issue 2, JAA Interim Policy INT/POL/25/14. *See http://www.caa.co.uk/docs/109/hfstg_INTPOL.PDF*
- FAA Policy Statements for Flight Deck Certification: ANM-99-2, [Reviewing Certification Plans To Address Human Factors] and ANM-01-03, [Factors To Consider When Reviewing an Applicant's Proposed Human Factors Methods of Compliance]. *mailto:9-ANM-111-Human-Factors@faa.gov*
- The Interfaces Between Flightcrews and Modern Flight Deck Systems, FAA, Jun 1996. See *http://www.faa.gov/avr/afs/interfac.pdf*
- Human Factors for Flight Deck Certification Personnel, K Cardosi, FAA Report DOT-VNTSC-FAA-93-4. Jul, 1993. *See http://www.volpe.dot.gov/opsad/pubs.html*
- A Crew-Centered Flight Deck Design Philosophy for High-Speed Civil Transport Aircraft, NASA TM-109171, Jan 1995. *See http://techreports.larc.nasa.gov/ltrs/PDF/NASA-95-tm109171.pdf*
- Human Factors Job Aid, FAA, Mar 1999. See http://www.hf.faa.gov/acquire/job_aid/job_aid.html
- Guidelines for Auditory Warning Systems on Civil Aircraft, CAA Paper 82017, UK CAA, Nov 1982.
- Aircraft Alerting Systems Standardization Study, Volume II: Design Guidelines, FAA, DOT/FAA/RD-81/38/II, 1981
- Human Factors Considerations for the Design and Evaluation of Electronic Flight Bags, D Chandra, Oct 2000. *See http://www.volpe.dot.gov/opsad/chandrdc.html*
- Human-Centred Flight Deck Design, NLR Flight Division (Human Factors Department), May 2002. *See http://www.nlr.nl/public/news/f211-01/f211-01.pdf*

Design - Other

- Human Factors Design Guide, FAA, 1996. *See http://www.tc.faa.gov/act-500/hfl/hfdg/*
- Human Centred Design for Maintenance, H Courteney, Proceedings of CAA/FAA/Transport Canada Conference, Mar 2001. *For more details, mailto:hazel.courteney@srg.caa.co.uk*
- Aviation Automation: The Search for a Human-Centered Approach, C Billings, Lawrence-Erlbaum Associates, 1997
- Advanced Technology Aircraft Safety Survey Report, Australian Transportation Safety Board, Jun 1998. *See http://www.atsb.gov.au/aviation/sdi/advtek.cfm*

Design of Checklists

- CAP 676 Guidelines Design & Presentation of Emergency & Abnormal Checklists, UK CAA, 1997.*
- CAP 708 Guidance on the Design and Presentation of Electronic Checklists, UK CAA, Dec 2000.*
- Human Performance Considerations in the Use and Design of Aircraft Checklists, FAA, Jan 1995. *See http://www.faa.gov/avr/afs/checklist.doc*
- HF of Flight-Deck Checklists: The Normal Checklist, A Degani, E Wiener, NASA Report 177549, May 1990. *See http://www.bluecoat.org/reports/Degani_90_Checklist.pdf*

Safety Management Systems (SMS)

- CAP 712 SMS for Commercial Air Transport Operations, UK CAA, 2001. See *http://www.caa.co.uk/docs/33/cap712.pdf*
- Guidance for Developing and Auditing a Formal SMS, UK CAA, 2000. *Can be obtained from Corporate Affairs Dept, SRG, UK CAA, or tel: +44 (0) 1293 573509*

Training Courses

- Human Factors in Aerospace: Design for Operations - 3 day course at University of West England, UK. *Contact: mailto:Philip.Lawrence@uwe.ac.uk, or tel +44 (0) 117 3443630*
- Human Factors in Aviation - 3 day course at Cranfield University, UK. *Contact: mailto:shortcourse@cranfield.ac.uk, or tel: +44 (0) 1234 754176*
- Human Factors & Safety Assessment in Aeronautics MSc at Cranfield University. *Contact: mailto:hfsa+1@cranfield.ac.uk, or tel: +44 (0) 1234 754724*
- Human Factors Short Course - 2 week course at University of Michigan. *Contact: mailto:shortcourses@umich.edu, or tel: +01 (734) 647 7200*
- Bases Facteurs Humains pour la Conception de Systèmes Homme-Machine en Aéronautique, Diploma at University Rene Descartes. *Contact: mailto:laa@citi2.fr, or tel: +33 01 42 86 20 41*
- Human Factors for Engineers – 3 day course at Southampton University, UK. See *http://www.iee.org/Events/g17sep02.cfm*

OPERATORS

General

- Operator's Flight Safety Handbook, GAIN, Jun 2000. *See http://www.gainweb.org/*
- Pilots, Personality and Performance: Human Behaviour & Stress in the Skies, S R Deitz, W E Thoms (eds.), Quorum, 1991
- Human Factors in Multi-Crew Flight Operations, H W Orlady, L M Orlady, Ashgate, 1999
- Propulsion System Malfunction and Inappropriate Crew Response, Flight Safety Digest Nov-Dec 1999, Flight Safety Foundation. *See http://www.flightsafety.org/pubs/fsd_1999.html*

General Aviation

- GA Safety Sense Leaflets, UK CAA. *See http://www.caa.co.uk/srg/general_aviation/document.asp*
- Human Factors for General Aviation, S R Trollip, R S Jensen, Jeppesen Sanderson, 1991

Training - Crew Resource Management (CRM)

- Guide to Performance Standards for Instructors of CRM Training in Commercial Aviation, RAeS, CAA & ATA, Riverprint. See *http://www.crm-devel.org/resources/misc/raesperf/perfstan.htm*
- CRM Manual, Transport Canada. See *http://www.crm-devel.org/resources/misc/transcan/transcan1.htm*
- Developing Advanced CRM Training, FAA, 1998. *See http://www.hf.faa.gov/docs/DACRMT.pdf*
- CRM - Flight Crew, JAA NPA-OPS-16. *See http://www.raes-hfg.com/Reports/npa-16.pdf*
- Other resources *at http://www.crm-devel.org or http://www.iata.org/oi/committees/hfwg*

Training - Other

- Turbofan Engine Malfunction Recognition and Response, ATA and FAA, Nov 2000. *Can be obtained from FAA Engine & Propeller Directorate, ANE-110, 12 New England Executive Park, Burlington, MA 01803, (tel: +1 781 238 7110)* . N.B. Material for Turboprops in preparation.
- Approach and Landing Accident Reduction Toolkit, Flight Safety Foundation. Free to FSF members. *See http://www.flightsafety.org/cfit4.html*
- Take-off Safety Training Aid, FAA. *Contact: Customer Training and Flight Ops Support, Boeing Commercial Airplane Group, P.O. Box 3707, MC2T-65 Seattle, Washington 98124-2207, USA*
- ICAO Aviation Training Directory. See *http://www.icao.int/td*
- The Journal of Professional Aviation Training. *See http://www.j-pat.com/jpat.htm*

Maintenance

- Maintenance Human Factors Program Guidelines, ATA Spec. 113, ATA, Jan 2000. See *http://www.airlines.org/public/publications/display1.asp?nid=938*
- Human Factors in Airline Maintenance, Australian Transportation Safety Board, Jun 1997. See *http://www.atsb.gov.au/aviation/sdi/hfac.cfm*
- CAP715 An introduction to Aircraft Maintenance Engineering Human Factors for JAR 66, UK CAA, Jan 2002. *See http://www.caa.co.uk/docs/33/CAP715.pdf*
- CAP716 Aviation Maintenance Human Factors (JAA JAR 145), UK CAA, Jan 2002. See *http://www.caa.co.uk/docs/33/CAP716.pdf*
- CAP718 Human Factors and Aircraft Maintenance and Inspection (previously ICAO Digest No 12), UK CAA, Jan 2002. *See http://www.caa.co.uk/docs/33/CAP718.pdf*
- Human Factors in Maintenance Working Group Report, JAA HF Maintenance Working Group, May 2001. See *http://www.jaa.nl/maintenance/documents/humanfactors_frame.html*
- List of Training Providers. See *http://www.raes-hfg.com/xmaintsg.htm*

Medical

- Aviation Medicine 3rd Edition, J Ernsting, A N Nicholson, D J Rainford, Butterworths, 1999
- CAP 371 Avoidance of Fatigue in Aircrew 3rd Edition, UK CAA, May 1990.*
- Index of International Publications in Aerospace Medicine, Office of Aerospace Medicine, FAA. *See http://www.faa.gov/avr/aam/intpub.htm*

AIR TRAFFIC CONTROL

- Systematic Safety Management in the Air Traffic Services, R Profit, Euromoney, 1995
- Human Factors Guidelines for Air Traffic Management Systems, Doc no 9758, ICAO, 2000.**
- Human Factors for Air Traffic Control Specialist: A User's Manual for Your Brain, FAA, 1999. *See http://www.hf.faa.gov/docs/volpe/hfatcs.pdf*
- HF Guidelines for ATM Systems, UK NATS R&D Report 9739, Aug 1997
- HF in the Design and Evaluation of ATC Systems, FAA, 1996. *http://www.hf.faa.gov/docs/VolpeHndk.zip*
- Various Eurocontrol documents on Human Factors, Manpower, Training and Licensing. See *http://www.eurocontrol.int/humanfactors/publ.html*
- Human Factors Integration in Future ATM Systems Database. *See http://www.hifa.org/hifa.html*

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