PACDEFF

SOUTH POLE 4998km

1956km SYDNE

18946km LONDON

- VANCOL

9427km BANGKOK

12295km DELHI

15003km NOK

94.241

Queenstown 24-25 Nov 2011

CAANZ Presentation

Human Factors in Aviation



A CAANZ Perspective

Mark Hughes, General Manager Airlines



Scope

Human Factors

- Airline Flight Operations
- Personnel Licensing
- Maintenance
- Air Traffic Services
- Occurrence Investigation
- Systems approach
- CAANZ Initiatives



Airline Flight Operations

- Update on Rules development
- Update on AC development
- Training
- Operating Procedures
- FRMS

Rule Development



Part 121 (large aeroplanes) – Crew member training & competency assessment

- Final Rule target April 2012
- **o Human Factors training**
- Flight crew and cabin crew
- All phases of training
- Instructor & Examiner
 competency (HF)

Rule Development

Part 125 (medium aeroplanes) – Crew member training & competency assessment

- o NPRM with MoT
- Regulatory Impact
 Statement
- **o Human Factors training**
- Similar to Part 121
- Use of simulators
- Line training safety



Advisory Circular Development

- Final draft completed imminent release for consultation
- 2 year transition period (per Rule)
- Changes to crew member training approach
- Investment in instructor/examiner training
- Implementation guidance
- Joint industry regulator effort
- Need for further and on-going stakeholder engagement
 - Airline flight operations seminar being planned

Advisory Circular Development

- Integration of technical & non-technical skills
- Classroom \rightarrow simulator \rightarrow aircraft
- Flight crew and cabin crew
- All phases of training
- Training standards
 - Objectives
 - Competency requirements
 - Elements of training programme
 - Acceptable training methodologies
- Behavioural marker system not prescriptive
- Instructor & Examiners competent in evaluating HF/CRM aspects of performance

| | Advisory Circula |
|---|---|
| - | Revint |
| | |
| G | ieneral |
| | Civil Aviation Aviabority Advisory Circulars contrib information about standards, practices, and procedures that the Director bas found its los as Acceptable Means of Compliance (AMC) with the searceitated role. |
| | Ap AMC is net interded to be the only means of compliance with a role, not consideration will be given to other methods of compliance for may be presented to the Director. When new standards, practices, or procedures no firms to be acceptable they will be added to the appropriate Advisory Circular. |
| | An Advisory Orgalar may also include guidance nuterial (GNI) to facilitate compliance with the rule requirements. Guidance susterial must not be regarded us on acceptable means of ecospliance. |
| | When an Advisory Circular trees manulatory language such as "immed" in "may not", it is questing or paraphysising a regularity requirement or prohibition. When an Advisory Circular uses permissive longpage state as "about" or "may", it describes an increatable actents, but not the only means. of compliance. |
| ę | urpose |
| | This Advisory Circular provides an outline to fire respirements for Crew Member Human Pactors (IF) and Crew Resource Management (CRM) turining in New Zealand. |
| R | tolated Rules This Advisory Cárcular relates specifically to Cáril Avistica Rule Part 121 Sebparts H, H and J . |
| c | ihange Notice Original issue. |
| | |
| | Published by Gild Availon Justicaly PO20ar 31441 Lawer Huil |
| | |

Training

- "For they learned that true safety was to be found in long previous training, and not in eloquent exhortations uttered when they were going into action." Thucydides, 404 BC
- HF is an integral part of crew performance (knowledge – skills – behaviours)
- CRM training
- TEM training / LOSA
- Evidence Based Training (EBT)
- Non-routine flight operations
- RAeS \rightarrow resilience and professionalism
- AF447 Interim Report recommendations

Operating Procedures

- ICAO Annex 6, Part 1, 4.2.6
 - The design and utilization of checklists shall observe Human Factors principles.

• CAR 121.77

 Procedures, manuals, checklists used by crew members must conform with the principles of Human Factors

Reason accident causation model

- \circ organisation \rightarrow policies & procedures
- ICAO Safety Management Manual
 - Effective standard operating procedures are one of the eight 'building blocks' of safety management
- Procedure Assessment Tool (PAT)

Fatigue Management

- FRMS ICAO, IATA, NTSB
- CARs flight crew, need for new Rules for FAs
- AC 119-2 revision to reflect ICAO/IATA FRMS



What do the FRMS provisions include?

Annex 6 Part 1 – flight and cabin crew

- Standards and Recommended Practices (SARPs)
- Appendix 8

→ Guidance Material

- Operators
- Regulators

Personnel Licensing

Human Factors training and examination requirements

- Flight Crew: AC 61-5 (CPL, IR)
- Aircraft Maintenance Engineers: AC 66-2.17
- Air Traffic Controllers: AC 65-3



Maintenance

- CAA has initiated a project on 'Human Factors in Maintenance'
- Project will result in a Part 145 AC
- Focus is to optimise safety performance and reduce maintenance error
- Considerable international guidance available
- Some NZ Part 145

 organisations have
 HF programmes;
 industry input will
 be sought



Air Traffic Services

- Part 65 licensing core subject
- HF training requirements for Instructors and Examiners

• Part 172

- Clearances error management
- Occurrence investigation cause analysis to identify HF and system factors
- QA corrective/ preventative actions



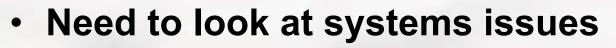
- SMS being introduced proactive risk management (including human factors aspects)
- Rule project to introduce fatigue risk management; now achieved by voluntary initiatives

CAA Occurrence Investigation

- Guidance for participant investigations AC 12-2
- CAA SIU investigators well trained in HF
- CAA safety investigations look at human, organisational, and system factors (including regulatory aspects) to determine cause
- Current approach relies heavily on Reason model
- Project underway to improve investigation guidelines
- A range of methodologies are being evaluated (e.g. ICAM, HFACS etc.)

Systems Approach

- HF is a component of the total aviation system
- JR & SHEL models include
 organisational factors



- HF ↔ organisational factors ↔ system factors
- ICAO Accident Prevention Programme
- SSP and SMS provide a good framework
 - Integration of HF into SMS
 - Managing Risk → human component

Proactive risk based approach

- "Complacency or a false sense of security should not be allowed to develop as a result of long periods without an accident or serious incident. An organisation with a good safety record is not necessarily a safe organisation"
- ICAO Accident Prevention Manual



CAA Initiatives

- SSP / SMS Implementation
- Human Factors projects
- CAA Inspector training



- CAA Organisation Change Programme
 - Improved policy delivery
 - Improved regulatory delivery
 - Improved safety information analysis and information sharing
 - Effective stakeholder engagement
 - Risk based, outcome-focused

Final Thoughts



From a CAA perspective...

- Human Factors initiatives can be implemented now
- Regulatory approach focused on reducing risk, promoting willing compliance with safety standards, and encouraging performance above the minimum standard
- Improvements in safety performance are best achieved by constructive engagement with participants
- This forum is an excellent example of aviation stakeholders working collaboratively to increase awareness and improve safety
- Thank you for inviting our participation

Questions?

