

# Implementing HF & NTS Training and Assessment in RPT Operations: A Regulator's Perspective



Australian Government  
Civil Aviation Safety Authority

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**CASA**

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*safe skies for all*

# Background

## ICAO SARPs 1<sup>st</sup> Jan 2009

- Requirement for SMS; and
- Requirement for Human Factors training and assessment.
  - ‘knowledge and skills related to human performance’ relevant to duties.
- Annex 6, Part 1
  - Para 8.7.6.4 (maintenance personnel) – covered in CASA Part 145
  - Para 9.3.1 (flight crew),
  - Para 10.3 (flight operations officer/flight dispatcher), and
  - Para 12.4 (cabin crew)
- Guidance provided in the ICAO Human Factors Training Manual (Doc. 9683).

# Background

Two Civil Aviation Orders (CAO) require Human Factors training.

CAO 82.3, 2.1(c) and 82.5, 2.1(c) require that Low and High Capacity Regular Public Transport (RPT) organisations have;

“A program, approved by CASA, to train and assess personnel in human factors and non-technical skills with the aim of minimising human error.”

# Background

Explanatory statement in paragraph 2.7 of CAO82.3/5:

- **human factors** or **HF** means the minimisation of human error and its consequences by optimising the relationships within systems between people, activities and equipment
- **non-technical skills** means specific human competencies, including critical decision making, team communication, situational awareness and workload management, which may minimise human error in aviation.

# Timeline

- First Stage

- 1 Jun 11      CASA Approved Program – Document level only

- Second Stage

- Jul 11 - Apr 12      Post Implementation Review  
*Mentoring - Identify risks and problems (to Dec 11)*

- Third Stage

- Apr 12- Jun 12      Post Implementation Capability Assessment

*On-site assessment of the implementation and effective operation of the HF/NTS program-This was carried out by a contractor in conjunction with CASA inspectors.*

# Types of Course Development & Management

- Internally developed program
- Externally Sourced – Off-the-Shelf with modifications
  - Updated and managed internally
- 3<sup>rd</sup> Party Provider – ongoing relationship
  - Quality assurance remains internal

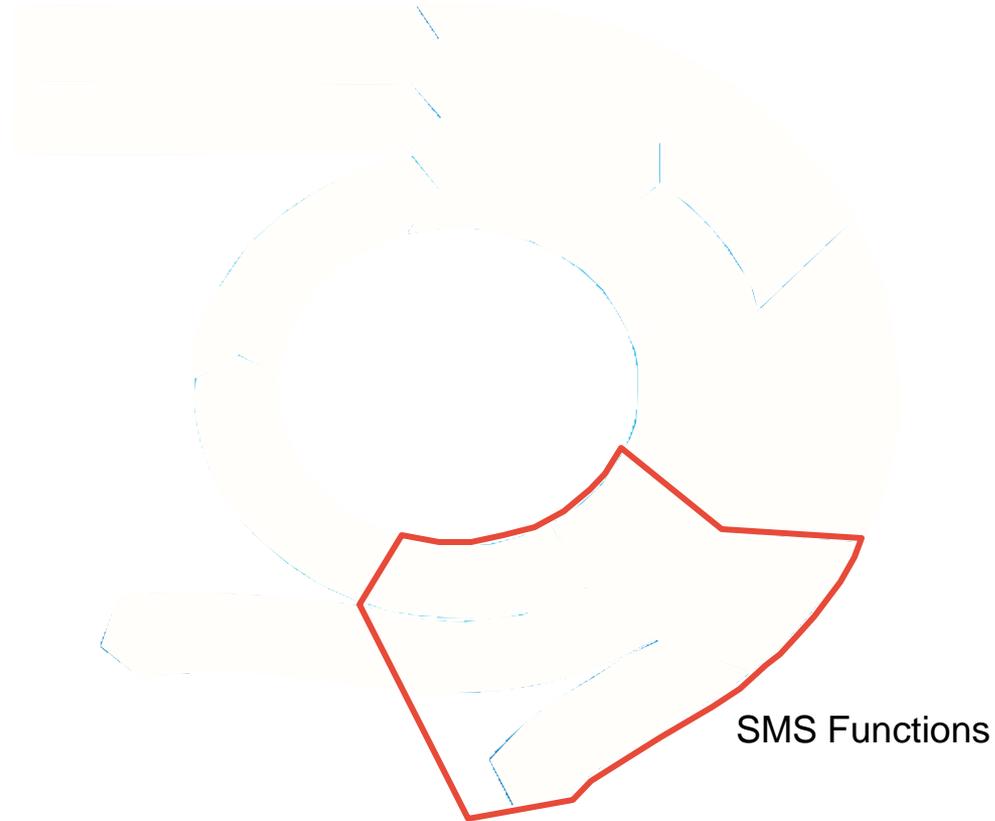
# Main Challenges from phase one

1. SMS Interaction
2. Communication requirements across different areas
3. Understanding and applying Outcome Based Legislation
4. Level of knowledge of industry – Extent and standard of education material provided
5. CASA approval of updates to Training Courses – Level of detail approved
6. 3<sup>rd</sup> party providers – how oversight and how to communicate effectively
7. Tailoring HF & NTS Training and Assessment program for different employment groups – Pilot, Cabin Crew, & Dispatcher

# SMS Challenges

- Initial submissions tended not to document connections between the SMS and the HF & NTS training and assessment program
- HF/NTS required SMS aspects to be functioning in a mature and healthy manner – safety assurance, communication, etc
- Safety analysis required with a HF/NTS training perspective
- Organic process – HF/NTS program should move toward reflecting organisation's operational context
- Approval of initial course content required processes for reflecting future HF & NTS threats and maintaining operational relevance.

# Incorporation into SMS



# Phase Three Assessment

For Phase 3, the focus of the assessment was whether the HF/NTS program was:

- “operating” (how each element was demonstrated to be functioning at the time of the assessment); and
- “effective” (whether each element was demonstrated to be functioning effectively).

# Grading for the Assessment

- HF/NTS Program 'Non Compliant'
- HF/NTS Program 'Somewhat' (SW) Compliant - Recommendations for Improvement proposed; and
- HF/NTS Program 'Mostly' or 'Fully' Compliant – Recommendations for Improvement leading to 'Best Practice' suggested if applicable.

# Key Strengths

- The majority of RPT operators assessed demonstrated well established, and for the most part, mature flight crew HF/NTS programs. This was not surprising given the long history of CRM under CAR 217 training organisations.

# Key Improvements Needed

## Need to extend skill based assessment beyond flight crew

- Flight crew skills based assessment of HF is generally well established in many organisations, but very few operators have extended this beyond flight crew centric programs into the skill based assessment of cabin crew and ground based Flight Operations Safety Sensitive Personnel.
- The 'skills' component of the NTS program in many cases was not systematically being trained and assessed to drive error management initiatives across the business.

# Findings of Assessments for 'Somewhat' Compliant HCRPT

Issues included:

- Lack of sophisticated, specific or measurable HF/NTS program objectives;
- Poor linkage between the HF/NTS training program and SMS performance outcomes;
- Little evidence of systematic use of SMS data (investigations) to facilitate HF/NTS training and assessment needs;
- Failure to fully implement effective skills-based training and assessment, particularly in cabin crew and flight operations safety sensitive roles; and
- Immature or non effective mechanisms to assess the behavioural and organisational impacts and effectiveness of the HF/NTS program.

# Findings of Assessments for 'Mostly' or 'Fully' Compliant HCRPT

General characteristics of HF/NTS programs at this assessment level were:

- Management commitment to the program;
- Highly knowledgeable and centralised program coordinators;
- HF/NTS program well integrated within the company SMS;
- Clear accountabilities for the HF/NTS program with good resources, well qualified and experienced key personnel and facilitators committed to ensuring the effective implementation of the program;
- Well prepared for the Capability Assessment, able to produce documentary evidence as proof of 'implementation' and 'effectiveness';
- Mature 'LOSA-like' programs in place for Flight and Cabin Crew, with behavioural observations implemented or being developed for all safety critical staff; and
- Good progress on implementing all HF/NTS requirements including ground based training and assessment.

# Findings of Assessments for 'Somewhat' Compliant LCRPT

General characteristics of these HF/NTS programs were:

- Mature HF/NTS programs in place for flight crew but not fully implemented in other flight operations safety critical roles;
- Linkage of HF/NTS program to SMS informal and not well documented;
- HF classification system for event based investigations often immature and surface level;
- No LOSA style program in place or no specific plans to measure error management capability;
- No clear evaluation strategy of program effectiveness in place;
- Not all Flight Operations Safety Sensitive Personnel have undergone training;
- HF training is predominantly awareness based; and
- Management commitment to program observed but not as mature as should be.

# Findings of Assessments for 'Mostly' or 'Fully' Compliant LCRPT

General characteristics of the HF/NTS programs included:

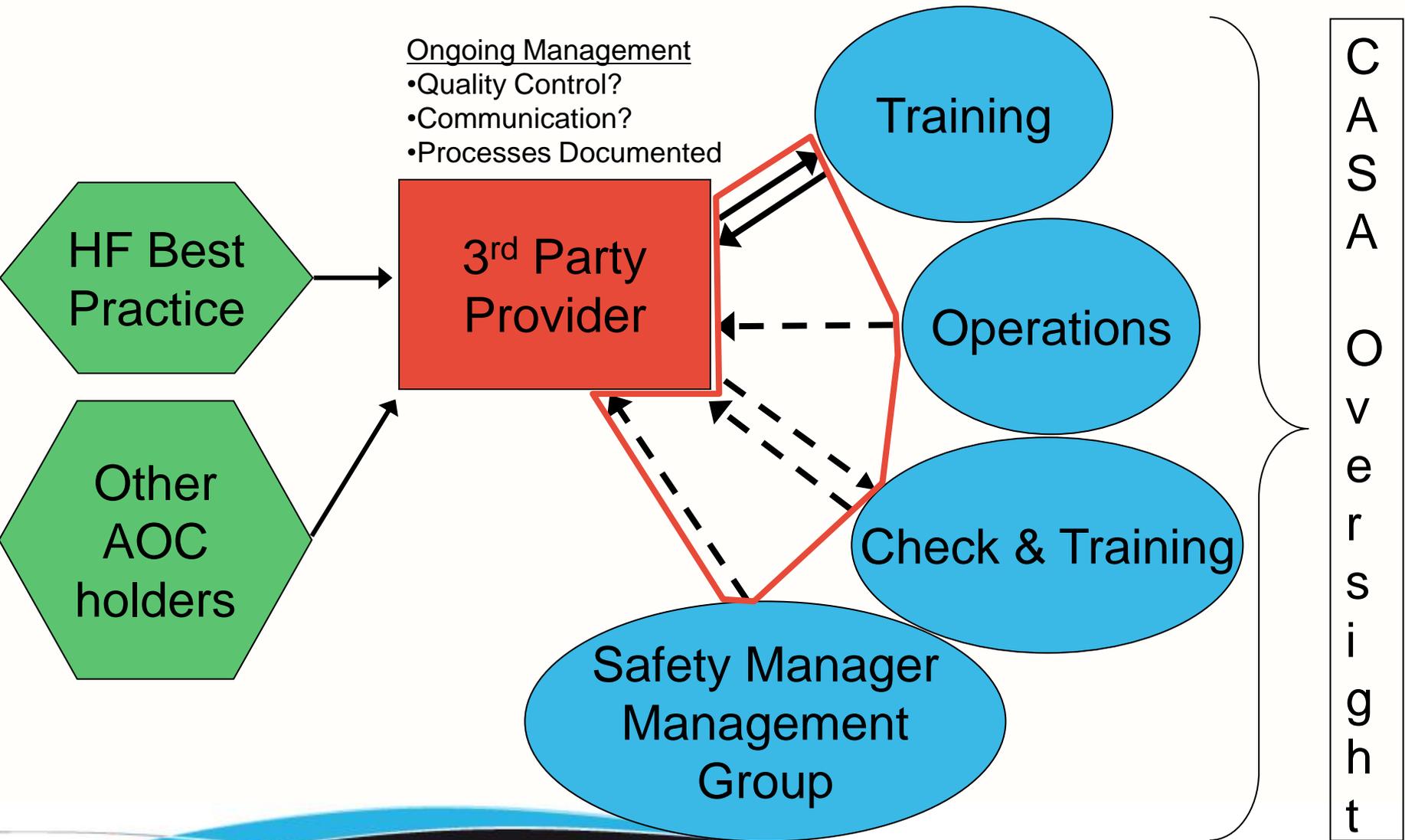
- Good management commitment to program;
- HF/NTS awareness training program sound and contemporary in nature;
- Skill based assessment program fully in place;
- Adequate links observed between HF/NTS program and SMS; and
- Very well prepared for HF/NTS assessment with a mature approach representative of an established program being in place for some time.

# 3<sup>rd</sup> Party Providers

The use of third party training providers has resulted in the following observed issues in many of those organisations:

- A significant shift of ownership for the program to the external provider. For example, some Operators have a manual that refers to document control and positions (fleet administration manager or safety manager) that do not exist.
- Misperception that courses provided by 3<sup>rd</sup> parties could be “CASA approved”;
- The HF/NTS manuals not tailored to the operator. For example, manuals referring to cabin crew when an organisation does not employ any cabin crew;
- Very little tailoring of the program to the operating environment and risk profile of the organisation;
- Confusion over accountabilities and responsibilities. Who is responsible for the HF/NTS program –the training provider or the Operator?

# 3<sup>rd</sup> Party Providers

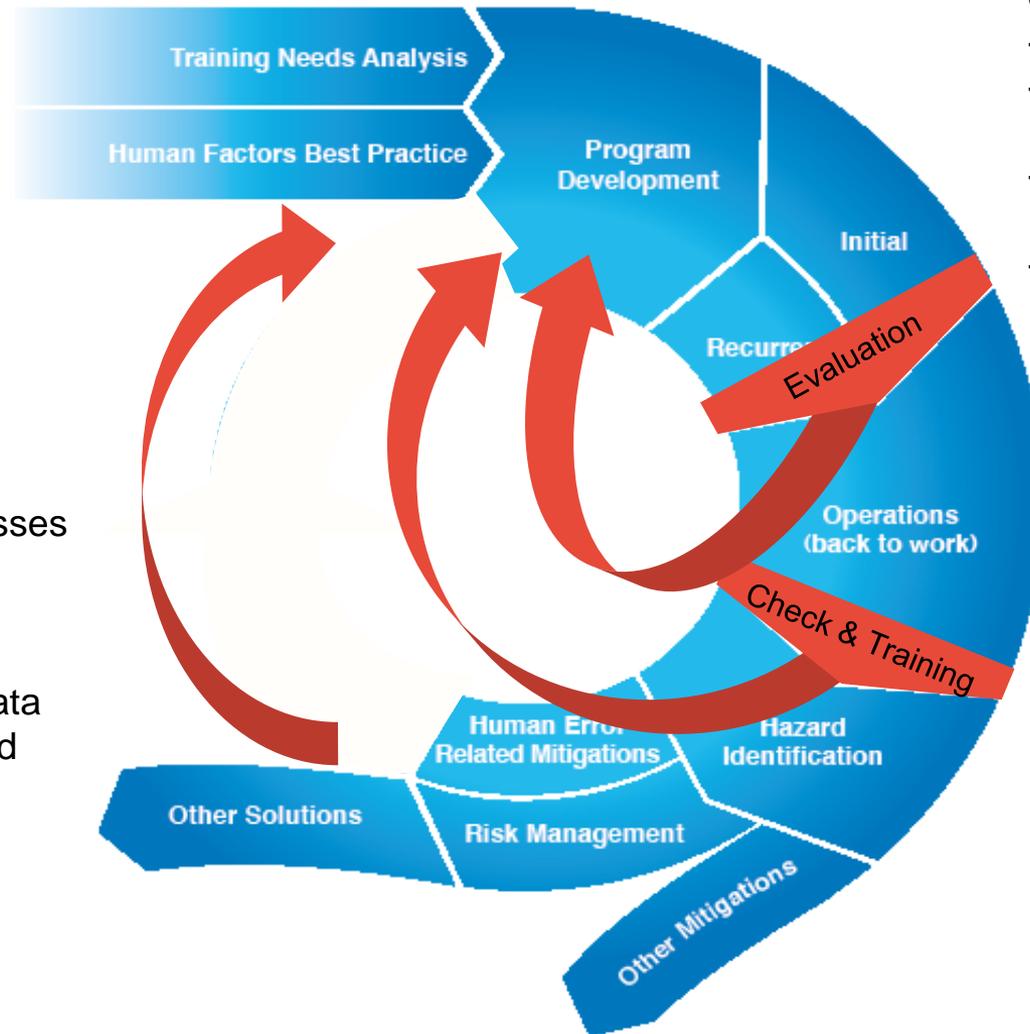


# Poor Integration of HF/NTS Data

The most common limitation of the HF/NTS programs assessed was the lack of integration of different sources of human factors data

- Limited number of Operators had developed a sound framework to capture predictive (LOSA), reactive (event based investigations) and check and training line assessment data within a common framework to analyse emerging HF/NTS issues.

# Communication Pathways



- Course Feedback
- Validity of content
  - Quality and depth of content
  - Facilitator performance
  - Relevance

- Assessing HF & NTS
- Assessment Methodology
  - Simulator
  - Line Checks
  - LOSA
  - Assessment templates
  - Reliable Assessment
  - Across types/operations

## SMS Processes

- Applying Error Management Goals
- Interpreting/Coding data
- Considering integrated approach
- Tracking progress
- Feedback loop

# Integration of HF/NTS into SMS

- A common view was that an HF/NTS program was simply a training initiative and that this was adequate to meet the regulatory requirements.
- There was a distinct lack of awareness of the benefits of using HF/NTS initiatives as an indicator of SMS performance .

# Challenges in a Nutshell

1. Integration of HF/NTS program into SMS
2. Skill development & assessment – Role specific
3. Resource constraints of smaller RPT AOC holders
4. Understanding of the scalability of requirements
5. Need for sufficient resources in the Regulator



*Questions?*