



Australian Government
Civil Aviation Safety Authority

CAO 48.1

The Journey thus far

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Known Knowns

Known Unknowns

Unknown Unknowns

2019

What we knew

What do we know now?

Learnings

Where do we go from here?

CAO 48.1 The Journey's Start 2019

Known Knowns "Knowledge"

- Fatigue within operations with Standard Industry Exceptions were not being actively monitored
- Flight Crew Member Alertness levels could not be verified
- Aviation movements were increasing domestically and internationally
- Flight Duty Periods and sectors were increasing in length and numbers
- Unregulated/unmeasured/unmonitored fatigue risk was increasing

Known Unknowns "Risks"

- Limits in the Appendices negatively impact FCM's levels of alertness:
 - Domestic
 - International
 - HEMS
- Organisational culture change:
 - within the enhance obligations
 - within a trial period for FRMS
- Awareness/familiarity of alertness measures and methods
- Systems for data collection, analysis and retention

Unknown Unknowns "Unidentified Risks"

- FCM trust – CASA, AOCs
- Regulatory/CASA Outcome-based surveillance
- Over-reliance on BMM as knowledge v. **guidance**
- Use of data from FRMS, MV, and Enhanced Fatigue Obligations for compliance v. driving **continuous improvement**
- Fatigue Specialists to assist Industry
- Timeline for implementation

Expectations of 48.1 Enhanced Obligations



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The Limits in Appendices 2-6 are like the engine – they are pre-determined and ready to follow

BUT

Enhanced Fatigue management obligations are the “engine maintenance”:

- Hazard ID

- Hazard recognition

Continuous monitoring of the system through:

- Data collection

- Internal audits

- Feedback from Drivers (FCMs)

Chevrolet Corvette
DieselStation.com

2009 LS9 6.2L V-8 SC (LS9)

Expectations of 48.1 Minor Variations



A Minor variation is a specific modification to the Limits in Appendices 2-6 – like a turbocharger
Requires:

Enhanced Fatigue management obligations

+

Targeted Hazard ID of the variation

Continuous monitoring of the MV:

- Data collection
- Internal audits
- Feedback from Drivers (FCMs)

Expectations of 48.1 FRMS



AOC's with FRMSs have chosen to “build” bespoke systems from the set of components comprising the Appendices.

FRMSs customise strategic elements and ensure these are working in an integrative and effective manner:

- Predictive fatigue controls:
 - Roster design & review, policies, BMM, FDP rules.
- Proactive fatigue controls:
 - Self-reported fatigue, prior sleep/wake, ODP rules monitoring.
- Reactive fatigue controls:
 - Safety reports and events, including fatigue experience & occurrence reporting, investigations, training and communications.

FRMS Learnings/Common Concerns thus far...

FSAGs

- FCM input
- Hazard ID
- Policies in action
- Element of Culture change
- Capture of “Effectiveness”

Metrics

- What is being measured
- How often
- Useability of the data
- What is Fit-to-Fly

Monitoring

- Evaluating Training
- Adjustments to:
 - Policy & Procedures,
 - Schedule patterns,
 - Operational elements
- Feedback

Known Knowns about the future of 48.1

CAO 48.1 is not meant to be a static rule set.

An overarching philosophy of outcome-based regulation requires continuous improvement on the part of CASA.

- This requires input and feedback from industry on their experiences with the regulation.
- There is a fundamental requirement for input and feedback from end users – FCMs
- There is a need for consultation with institutions such as universities, fatigue management agencies, fatigue tool providers, and aircraft manufacturers.

Only through active engagement among all the contributors can a holistic understanding of the regulations (**meaningful and practical**) impacting fatigue/safety/human performance in aviation be achieved.

Continuous Improvement – A Known Unknown of 48.1





"Can AI or Robots Replace Commercial Pilots?" Saad Mehmood May 16, 2023

Questions?