

# **Using an Integrated Causal Model to Better Manage Airline Risk**

Robert Dodd  
General Manager, Group Safety  
Qantas Airways Limited

**Abstract of a Paper presented to the**

**61<sup>st</sup> Annual International Air Safety Seminar (IASS)  
A Joint Meeting of Flight Safety Foundation, International Federation of Airworthiness and  
International Air Transport Association**

**Honolulu, Hawaii**

**October 27-30, 2008**

Copyright © 2008 by Qantas Airways Limited

This paper describes a recently developed approach to the integration of risk data based on a multi-dimensional causal model.

The Qantas Group has substantial experience in aviation safety management operating a formal safety management system and utilizing a range of methodologies and data sources including; safety incident and hazard reporting, confidential reporting, flight data analysis, LOSA-style internal audits, proactive risk assessments and safety system audits and assessments. Following work to develop and implement an integrated safety management system encompassing aviation safety, occupational safety and environmental management, it was decided to examine ways to integrate data across a wide range of risk management areas in the airline. In this way scarce resources can be optimized and relatively sparse data can be leveraged to provide a broadly based understanding of the drivers of risk.

Qantas has for many years used a cause structure based on Reason's organizational safety model to combine findings from internal safety investigations, safety and quality audits. It was decided to expand this model to encompass issues related to the management of all aspects of risk – safety, security, financial, commercial, and environmental. The safety systems causal elements were bolstered by incorporating risk control concepts drawn from the COSO framework<sup>1</sup> to provide improved relevance to broad corporate risks. At the same time the safety systems causal structure was revised to reflect the learning from many years of practical application. Finally, the experience of a large in house LOSA – style audit program covering flight deck, cabin and, more recently, ramp operations was used to incorporate Threat and Error Management (TEM) concepts into the overall framework.

This causal model has been implemented into the safety management software used in Qantas (Aviation Quality Database) to provide an integrated information system. This system is being used to capture findings from investigations, audits (including LOSA-style audits) and risk assessments across all aspects of the airline business to provide a single causal map of the drivers of risk and the performance of risk management. With this broader basis a more powerful analysis is possible, providing outcomes relevant to all dimensions of a manager's responsibilities. This in turn results in improved safety management outcomes.

---

<sup>1</sup> The Commission of Sponsoring Organisations of the Treadway Commission. COSO was originally formed in 1985 to sponsor the National Commission on Fraudulent Financial Reporting, an independent private sector initiative which studied the causal factors that can lead to fraudulent financial reporting. This led to the development of an Enterprise Risk Management framework.