

Safety in numbers: Lessons from the Qantas group of regional airlines

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Introduction

The maintenance of a high safety standard within the regional airline sector is particularly important considering the integral role that regional airlines play within the commercial aviation industry^{1 2}. This paper will outline the evolution and continuing development of safety management systems within the Qantas group of regional airlines. The history and traditional safety philosophy of each Qantas subsidiary will be traced culminating in the present day safety union between each operator and Qantas mainline. Finally, future safety challenges facing the regional airline industry will be addressed.

The Combined Network

Currently the four Australian regional airlines in the Qantas group operate a total of 46 aircraft to 70 cities and towns throughout Australia. The fleet mix includes variants of the Bae 146 and Dash 8 aircraft and the Shorts 360. More recently Qantas New Zealand operating a fleet of Bae 146 and Dash 8 aircraft over the New Zealand network has joined the Qantas group.

Of the four Australian operators, Southern, Sunstate and Eastern have experienced similar but independent beginnings as small rural operators. The fourth operator, Airlink, is part of the commercial airline arm of National Jet Systems and introduced a different form to the Qantas group.

¹ The terms "Regional", "Commuter" and "Third Level" have been used interchangeably to describe low capacity operators within the Australian airline industry. However, the use of the term "regional" appears to be the most common and consequently this label will be adopted to describe low capacity passenger carrying operators in this paper.

² A regional airline is defined as a regular public transport (RPT) operation using low capacity aircraft to transport persons or cargo for hire or reward in accordance with fixed schedules. Low capacity aircraft are defined as those with a seating capacity of 38 passengers or less, or a maximum payload of 4200 kilograms.

Southern Australia Airlines

Southern was originally formed as Murray Valley Airlines in 1981 and later became Sunstate Airlines (Mildura). The Southern Australia Airlines name was adopted after the purchase of the company by Australia Airlines. Like Sunstate and Eastern, Southern became a subsidiary of Qantas following the Qantas acquisition of Australian Airlines in 1992.

Southern currently operates a fleet of Bae 146 and Dash 8 aircraft. A formal safety department was formed in 1997 with the appointment of a flight safety manager. The flight safety manager reports directly to the Chief Pilot and the General Manager. Prior to the formalisation of a safety department, Southern published a safety journal to disseminate safety information. Hazard and occurrence reporting programs followed. These programs were based on the Indicate safety program (Edkins, 1998, 1999a) promoted by the former Bureau of Air Safety Investigation (BASIS). In 1998, Southern introduced a flight safety committee, which has operational and engineering participation and represents all bases and aircraft types.

Sunstate Airlines

Sunstate Airlines first took to the skies of Queensland in 1981. Originally formed to meet the needs of business travellers in the south east of the state utilising the Embraer Bandeirante, the fleet expanded with the introduction of the Shorts 330 aircraft, followed later by the Shorts 360 and Dash 8. The current fleet consists of the Shorts 360 and Dash 8 series 100, 200 and 300 aircraft.

The airline has a diverse route structure servicing 23 ports stretching from Horn Island in the north, to Melbourne in the south and flies the longest turbo-prop regional network in the world. Sunstate currently utilises a confidential safety reporting system based on the Indicate program, which is coordinated by the flight safety manager. A committee incorporating operational and maintenance personnel has been formed to manage this program. The company also publishes a quarterly newsletter designed to keep all their staff abreast of the latest flight safety issues.

Eastern Australia Airlines

Eastern Australia Airlines conducted its first passenger carrying operation in 1949 under the name of Tamworth Air Taxies. Since that time, the company's route network has expanded to include 16 destinations in New South Wales, the Australian Capital Territory and Victoria. During the 1960's and 1970's the airline amalgamated with a number of commuter operations to form East Coast Airlines. In 1987 the Eastern Australia Airlines name was adopted. The fleet has seen the use of the Auster in its beginnings through Piper Navajo, Cessna 404, Embraer Bandeirante and Bae Jetstreams. The airline currently operates an all Dash 8 fleet.

In 1998 a flight safety officer was appointed and given the responsibility of creating the aircrew safety journal. This journal is still published regularly throughout the year. The role of the flight safety officer grew over this period and the title changed to flight safety manager in 1999. In addition to being editor of the journal, this role grew to encompass such tasks as implementing the Indicate program, incident/accident investigation, flight operations corporate emergency response and dangerous goods training and education

Airlink

The history of Airlink is a little different to the three Qantas subsidiaries in that its safety culture and flying background is that of National Jet Systems. Originally established in 1990 as Jet Systems, the group evolved into three main operating arms; Airlink, Fleet Support and Surveillance Australia.

The National Jet Systems group operates a fleet of Bae 146 and Dash 8 aircraft to 23 destinations on behalf of Airlink. Safety management programs were first introduced in 1996 by the then Chief Pilot. The safety program components currently involve quality assurance of engineering and maintenance, flight operations and ground support and security. The group employs various

mandatory and confidential reporting systems and safety is enhanced by the analysis of data and incident investigation.

Contrasting operations

Each of the operators outline above have experienced similar beginnings in commuter operations, operated almost identical fleets over similar networks and created comparable management positions and concepts in safety management.

However, despite the common link to Qantas, during their developmental stages, there was little or no collaboration between the individual organisations. For example, Southern, Sunstate and Eastern each introduced an Indicate based confidential reporting system. The systems were introduced in different ways and incorporated different components. Although the three operators flew the same aircraft types, each operator had different aircraft checklists and operating procedures. More importantly, the lessons learned from safety occurrences were not always shared amongst the group.

Stimulus for change

In Australia, the standard of Regional airline safety has received considerable attention because of a small number of highly publicised fatal aircraft accidents. As a result of these accidents, a report on the safety of the Australian general aviation sector and regional airlines, by the House of Representatives Standing Committee on Transport, Communications and Infrastructure, known commonly as the Morris report, was released in December 1995. The report identified that there was a lack of information on low capacity regular public transport (RPT) operations and an absence of robust indicators on aviation safety. In addition, the report called for *airline management to take full responsibility for safety, and that both the aviation industry and aviation safety authorities, must be more proactive in identifying safety deficiencies so that the potential for accidents is reduced.*

As a result, in 1998 the Civil Aviation Safety Authority (CASA) embarked on an education program for low capacity regular public transport operators, which was aimed at encouraging the development and maintenance of safety programs (CASA, 1998). Part of this education program reminded holders of air operator certificates (AOC) of their legal obligations under the Civil Aviation Act of 1998, Section 28BE. In short this legislation suggested that company directors carry the main responsibility for the safety of their operation.

Consequently many regional airlines started to formally enhance their existing safety programs by introducing recognised safety management initiatives into their organisations. Qantas was proactive in this endeavor, conducting audits of the regional airlines to identify similarities and differences in safety management practices. Although finding no significant deficiencies, subtle differences were evident, and a more coordinated approach was required.

The reforms

Greater safety collaboration by the Qantas regionals has resulted in a more consistent and unified approach to safety management. Specifically the changes were:

- *More consistent "Safety Policies and Programs"* with renewed emphasis on presentation and crew awareness. These previously had many forms and most were buried deep in individual operations manuals.
- *More unified safety structure and reporting relationships.* This involved the appointment of a flight safety manager and flight safety officers in each of the regionals. The roles were consistently defined as:
 - The flight safety manager reports directly to the General Manager, and is responsible for: implementing an aviation safety program.
 - Conducts investigations into safety related events.
 - Conduct audits of any airline operation or facility.

- Represents the airline in flight safety matters when dealing with government agencies and professional organisations.
- Flight safety officers are appointments made by the flight safety manager to represent the respective operational discipline or base of the airline, i.e. flight attendants, engineering and operations. They are responsible for monitoring the aviation safety culture within their area/section and ensuring that all reports relating to safety matters are prepared and submitted. In addition, they act as a member of the flight safety committee.
- The flight safety committee consists of the combined group of flight safety officers set up to represent all professional bodies and bases of the airline's operation. The purpose of the committee is to provide guidance to the flight safety manager in all facets of safety monitoring and management. The committee represents an independent review process providing expertise on the various facets of the airline's operation.
- *Better standardisation of safety approaches* has created greater efficiency. This in turn has enabled lessons from one organisation to be transferred to another without the having to go through the evolution and development process.
- A common approach to a *Corporate Emergency Response Plan (CERP)* has resulted in the ability to provide cross border support to one another in the event of an incident or accident.
- *A unified representation at industry forums* provides strength and commitment from the Qantas regional group.
- The adoption of a *common hazard reporting and management database*. Up until recent months the Indicate program was used to record reported hazards. This database is now being superseded by the Aviation Quality Database (AQD), that has greater application for both the recording of mandatory reported safety occurrence information as well as safety hazard and audit data.

The process

One of the key processes that has facilitated a greater safety collaboration between each of the regionals have been attendance at quarterly Qantas regional flight safety forums to discuss matters of mutual interest. These are conducted on a rotating basis where each regional airline hosts the forum at its home base. The forum is attended by various Qantas safety managers and the flight safety manager from each of the regional airlines. The forum is normally chaired by the flight safety manager of the host airline.

The forum enables senior management from each of the regionals to become familiar with the workings of the group, and to develop confidence in the open sharing of information and resulting benefits. Through out the year there is continuous communication between the groups, via the respective flight safety managers. Individual problems and concerns can be brainstormed within the group to speed the safety process. In addition, the minutes of all flight safety committee meetings and newsletters are passed around to keep each other informed.

It is proposed that in time, quality assurance will be managed by auditing and cross-pollination of ideas from the regional organisations. Therefore, greater consistency within the group of airlines is expected.

Benefits

The Qantas regionals have gained considerable ground by promoting a unified and collective approach to safety problem solving. This has resulted in significant economic benefit both directly and indirectly through accident/incident prevention strategies. For example:

- *Cabin ready Light* - Like most regionals, crews of Sunstate Airlines operated many multi-sector days (possibly as many as eight sectors), and with fatigue, the risk of taking off with the flight attendant standing or cabin not prepared was identified. A little creative engineering solved the problem. The result is a light switching system located adjacent to the flight attendant station that is pressed when the cabin is ready and the flight attendant seated.

It activates a light in the cockpit, which, remains illuminated until cancelled by the flight crew when the checklist item is called (by pressing the light). In this way the checklist cannot be completed until this item is confirmed. The lighting system was approved under Civil Aviation Regulation 35. Since its installation, there have been no instances where a take off has commenced without the cabin being prepared. Both Southern and Eastern have adopted this system as a highly effective means of ensuring that the cabin is ready prior to take off. This has proven a very simple and cost effective solution to a problem plaguing airlines worldwide.

- *Under belly anti collision lights for the Dash 8* - A recognised hazard that is being addressed by the design and certification of the Qantas regionals through collaborative effort.
- *Dash-8 Seatbelts* - When passengers vacate their seats, the long strap of the seat belt often falls into the aisle, resulting in a potential hazard for crew and passengers (there have been cases of crew tripping over) and an impediment in the event of evacuation. In addition, the short piece of the strap for both seats are in the center of the seats, which can result in the first passenger sitting on their own strap and using the adjacent passengers strap. Engineering have subsequently reversed all passenger seatbelts on the Dash 8 fleet so that the short strap is on the aisle side of the seat, effectively reducing the company exposure to costly compensation claims from injury to crew or passengers.
- *Dash 8 Boarding Stairs* - It was reported that the gas struts, door linkages and door handle locking mechanisms for the boarding stairs on the Dash 8 aircraft were continually being damaged from flight attendants "riding on" the stairs as they were being lowered to the ground. Repair bills ranged from AUD\$700 to replace the gas struts to AUD\$1700 to repair the door handle locking mechanism. Investigation revealed that when gas struts are new they offer more resistance and consequently some flight attendants have trouble lowering the stairs. This problem has been rectified and a memorandum was issued to all flight attendants instructing them not to ride on the stairs as they are being lowered. As a result, the cost of repairs has been dramatically reduced.
- *Ramp Safety* - A number of reports were submitted regarding the poor supervision of passengers walking between the Dash 8 aircraft and the Melbourne airport terminal. Passengers have boarded the incorrect aircraft, walked in the vicinity of a mobile aerobridge and vehicle movements between the terminal and the aircraft have resulted in costly incidents where aircraft have been damaged or passengers have walked dangerously close to moving ramp traffic. Three incidents alone have cost the airline AUD\$24,500 from equipment damage, repairs, labor and cost of ferry flights. Cones (witches hats) have subsequently been introduced to mark a pedestrian walkway between the aircraft and the terminal, and also to restrict vehicle movements in this area. The introduction of AUD\$1000 worth of cones has resulted in no further incidents and improved the overall safety of ramp operations.
- *Dangerous goods* - Often safety incidents involving dangerous goods were handled independently by each regional with no central coordination. There is now greater collaboration and the Qantas group view is represented at dangerous goods industry forums.
- *Turbulence and aircraft training* - New flight attendants may have little appreciation of what turbulence is normal and what is not. For example, how much turbulence can an aircraft take? In addition, their limited knowledge about the time taken to conduct an instrument approach may result in poor situational awareness in regard to cabin preparation etc. To address these issues, a structured training package tailored to the solo flight attendant environment has been developed for common use by all the regionals.

Future Directions

While significant standardisation of safety management practices within the Qantas group of regional airlines has been achieved, more elaborate processes are required to further reduce costly duplication of effort. The following strategies are planned.

- *Common Analysis Framework* - One of the ways in which lessons from safety incidents can be achieved is to implement a common framework for safety occurrence analysis. In January 2000 Qantas purchased a new safety database called the Aviation Quality Database (AQD). This database classifies safety event, audit and safety hazard information using Professor James Reason's concept of active failures, workplace factors and latent conditions. The AQD platform will enable the regional airlines to share information with the core airline based upon a common causal language. This will greatly enhance the compilation of safety trend information so that specific areas requiring improvement across the group can be identified.
- *Investigation exchange* – Given the large and decentralised nature of the network serviced by the Qantas regionals, it is often difficult for each operator to efficiently respond to a safety incident, particularly in remote locations. Considerable time could be saved by utilising each other's safety investigation resources. The common investigation training experienced by the regional safety manager's makes this possible. This exchange requires considerable trust and openness between each operator, which has already demonstrated in the flight safety forums.
- *Peer Audit* – Historically Qantas has periodically conducted safety audits of its regional subsidiaries and alliance partners. While this program will continue, it is recognised that auditors with heavy jet backgrounds have limited understanding of regional operations. Therefore, it is anticipated that each regional carrier would benefit significantly from conducting peer audits to gain better insight into the maintenance of a safety management system that is not their own.
- *Regional industry forum* – The former BASI identified that the regional airline industry was a group that experienced significant safety issues different to that of the major airlines (BASI, 1998). Despite this, current regional groups within the industry, such as the Regional Airlines Association do not exclusively exist for safety enhancement. The regular safety forums conducted by the Qantas group have proved successful in identifying and addressing long standing safety problems that are often difficult to address as a sole operator. The Qantas group would like to offer a challenge to other regional operators to follow the Qantas initiative and collectively meet for the purposes of further improving safety standards within the industry.

Conclusion

In summary, evidence from both formal legal and accident investigation inquiries implies that low capacity regular public transport operators are a group that require specific targeting in terms of better safety management practices. In addition, survey and anecdotal evidence within the aviation industry suggests that many operators have sufficient motivation to adopt proactive safety management programs, but lack the required expertise or skills to accomplish this task successfully. (Edkins, 1999b)

The experiences of the Qantas group of regional airlines suggests that greater safety collaboration between similar operators provides a number of benefits, namely the ability to utilise the skills and expertise of others. However, if safety standard within the regional airline industry are to be further improved, greater safety collaboration on an industry wide scale is required. The recent initiative of CASA to regenerate the SAPCOM (Safety Program for Commercial Operators) program it began in 1998 may prove useful in this endeavor.

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