A SUBMISSION TO THE SENATE STANDING COMMITTEE ON RURAL AFFAIRS AND TRANSPORT

RE

AN INQUIRY INTO PILOT TRAINING AND AIRLINE SAFETY INCLUDING CONSIDERATION OF THE TRANSPORT SAFETY INVESTIGATION AMENDMENT (INCIDENT REPORTS) BILL 2010-11-01

BY

SHANE ALAN URQUHART

I wish to commend this Committee Inquiry and the Terms of Reference so established.

My interest in this Inquiry is as a private citizen who, along with many others in my circumstances, has ongoing concerns about the poor safety culture in the Australian Airline Industry, especially with regard to the safety regulator and the incident investigators. Our daughter was one of 15 people killed in the Lockhart River crash of the Transair/Aerotropics Metro 23 VH TFU on 07 May 2005.

I have previously submitted to the Senate Rural and Regional Affairs and Transport Committee Inquiry into the administration of CASA etc.

As a preamble to this brief submission and with the indulgence of the Committee Members, I need to point out the following issues:

- **Since May 2005, my attempts to bring to the authorities and the public of the nation, the weaknesses and downright shoddiness of air safety oversight in Australia have met with mixed results.**
- **Several individuals and organisations have continued to deny such a state-of affairs exist and some have resorted to questioning my psychological well-being.**
- **I have received a huge amount of support not only from the LHR victims' families but continue to receive encouragement from pilots, operators and families of other victims of fatal incidents.**
- **I fear no retribution from CASA, ATSB or the Transport Department as is not the case for those many people within the industry who do.**
- **Lastly and most importantly, my motive is to have the authorities recognise that the safety culture in Australia is second class and to hope that someone will really stand up and "fix the problem." In my next section, I aim to briefly support that ideal with some more issues.**

I have included below several dot points to illustrate my concerns about the issues at hand and have drawn on the Terms of Reference as a whole rather than as separate headings.

It is important that the Appendices included with this submission are read carefully and related to the current situation.....my point being that there has not been significant change in the oversight or application of safety regulations in 20 years, despite several Inquiries, Inquests and a Royal Commission. Many issues, recommendations and statements have simply not been addressed. It is my belief that the Committee can verify my assertions.

<u>THE ISSUES:</u>

- **It is well-known that the major airline operators in Australia pride themselves on a fatality-free record for a long period of time. They don't refer to the many near misses or covered-up incidents.**
- **This is not the case in the Civil Aviation arena, particularly in rural and remote areas. There has been observable change in the number of incidents, fatal or not, in this environment. Nor has there been a change in the poor safety oversight of the regulator on a number of fronts-**

  -cover-up of incidents for a range of reasons

  -harassing individuals and companies who question the regulator and preferential treatment for those who don't and/or "spy" on competitors for commercial advantage. The propensity of the regulator to litigate at the "drop-of-a-hat."

  -non-reporting of incidents which would reflect badly on the organisation

  -a suspect culture of recruitment and work ethics of Inspectors in the field. (FOIs)

  -an ongoing tactic of burying any sensitive questions or concerns, in beauro-speak or giving responses that are not accurate.

- **The most productive and visibly fair way to overcome this culture is to certainly indemnify anyone who raises legitimate concerns either with the regulator, investigator or Transport Department. This would stop the "revenge" culture which is so prevalent as to ensure that complaints are rarely made. These people do not want to lose their licences or their businesses.**

- **Commercial imperatives are still are major cause for concern. Safety must never be compromises for the sake of a quick saving of dollars.**

- **Pilots must be trained adequately and be endorsed for the flights they undertake. This must also include first officers/right-hand seaters. I believe that the cash-for-endorsement industry is still prevalent and that it is a major factor when safety is compromised. Those who carry out the training and endorsements must also be suitably qualified and beyond reproach.**

- **It must be taken into account that the Civil Aviation arena provides a significant number of personnel to the larger airlines. Surely this sector has to be seriously and continually supervised. The perception from where I sit is that a number of smaller incidents is more acceptable than a major incident with one of the larger companies.**

- **The senior person/old-hand culture has to be replaced with a culture of cockpit teamwork. The "I know what's best and how to do it because I have done it for so long" credo is simply unstainable given the significant increase in traffic. Ist officers are either intimidated or simple too "green" to challenge the "senior" man.**

- **The most worrying aspect of all of this is the serious lack of political will of a succession of governments and ministers to do anything except rely on their senior public servants to advise them. Hansard records many instances of the beaurocrats duping the politicians with lies and gobbledy-gook. Any attempts to challenge this have always fizzled out due to political expediency or lack of interest. Until someone with some real guts stands up and challenges the Aviation Industry environment and cultures and ensures that the regulations and acts are applied consistently without fear or favour...nothing will change, the merry-go-round will continue, the regulators and investigators will continue to abrogate their accountability and people will continue to have their safety in air travel at risk.**

I have, for reasons of brevity, not nominated any of the examples, incidents and information I have around the points above. They are all well-known within the industry.

Shane Urquhart

October 2010

Appendix 4 from ATSB report request My comments in red.

CASR Implementation Status Report

CASR Parts made	CASR Parts in legal drafting^	CASR Parts undergoing further development in CASA*
Part 1 Preliminary (1998)	**Part 42** Continuing airworthiness	**Part 61** Flight crew licensing
Part 11 Regulatory administrative procedures (2004)	**Part 66** Maintenance personnel licensing^	**Part 64** Ground authorisations
Part 13* Enforcement procedures (2004)	**Part 91*** General operating and flight rules^	**Part 71** Airspace
Part 21 Certification and airworthiness requirements for aircraft and parts (1998)	**Part 99** Alcohol and other drugs testing	**Part 90** Additional airworthiness requirements
Part 22 Airworthiness standards for sailplanes and powered sailplanes (1998)	**Part 103** Sport and recreational aviation operations	**Part 115** Operations using sport aviation aircraft for non-recreational activities
Part 23 Airworthiness standards for aeroplanes in the normal, utility, acrobatic or commuter category (1998)	**Part 105** Parachuting operations from aircraft	**Part 119** Air operator certification
Part 25 Airworthiness standards for aeroplanes in the transport category (1998)	**Part 121** Air transport operations - large aeroplanes	**Part 131** Non-recreational ballooning (formerly 115B)
Part 26 Airworthiness standards for aircraft in the primary or intermediate category (1998)	**Part 129** Air operator certification – foreign operators	**Part 132** Air experience and corporate operations
Part 27 Airworthiness standards for rotorcraft in the normal category (1998)	**Part 145** Maintenance organisations	**Part 133A** Air transport operations (rotorcraft)
Part 29 Airworthiness standards for rotorcraft in the transport category (1998)	**Part 146** Engineering representatives	**Part 133B** Aerial work operations
	Part 147 Maintenance training	

Part 31 Airworthiness standards for manned free balloons (1998) **Part 32** Airworthiness standards for engines for very light aeroplanes (1998) **Part 33** Airworthiness standards for aircraft engines (1998) **Part 35** Airworthiness standards for aircraft propellers (1998) **Part 39** Airworthiness directives (1999) **Part 45** Display of nationality and registration marks and aircraft registration identification plates (2000) **Part 47** Registration of aircraft and related matters (2000, disallowed and remade 2004) **Part 60*** Synthetic training devices (2003) **Part 65** Air traffic services licensing (2002) **Part 67** Medical (2003) **Part 91*** General operating and flight rules (2005) **Part 92** Consignment and carriage of dangerous goods by air (2003) **Part 101** Unmanned aircraft and rocket operations (2001) **Part 137** Aerial application operations - other than rotorcraft (2007)	organisations **Part 149** Recreational aviation administration organisations **^For how long? These are important training issues!**	(rotorcraft) **Part 135** Air transport operations - small aeroplanes **Part 136** Aerial work operations (excluding those covered by Parts 133 and 137) **Part 141** Flight training operators* **Part 142** Training and checking operators* **Part 174** Aviation meteorological services **Part 175** Aeronautical information services ***This is still undergoing further development? What does that mean for adequately trained pilots?**

Part 139 Aerodromes (2003) **Part 143** Air traffic services training providers (2002) **Part 171** Aeronautical telecommunication service and radionavigation service providers (2002) **Part 172** Air traffic service providers (2002) **Part 173** Instrument flight procedure design (2003) **Part 200** Aircraft to which CASR do not apply (1998) **Part 201** Miscellaneous (1998) **Part 202** Transitional (1999)		

APPENDIX 2 from the Senate Rural and Regional Affairs and Transport Inquiry report September 2008

(reflects lack of change) My comments in red.

Committee view

Effectiveness of administrative reforms since 2003

2.146 The committee recognises that in 2003 CASA embarked on comprehensive organisational and regulatory change. This has involved all aspects of CASA's operations. While the committee does not doubt the commitment of senior management within CASA to refocus the organisation, the committee notes from the evidence it has received in this inquiry that implementation of many aspects of this process of organisational change has been poorly perceived within the industry and the community. While there are many who welcome the changes to date, most submitters expressed some level of frustration with the pace and direction in which key changes have progressed. The committee notes that despite assurances from CASA management that the reforms have been carefully planned and implemented, the perception more widely is that the changes have been piecemeal and have had unintended consequences in a number of key areas.

2.147 In particular, the committee notes the concerns raised during this inquiry with regard to staff turnover, redeployment of staff and the availability of adequate and appropriately trained technical staff. The committee notes that CASA has recently moved to address staffing issues through the completion of a workforce capability and behavioural framework and the development of technical training initiatives. However, the committee is concerned that CASA appears to have embarked on such a widespread cultural, organisational and staff change without a plan for managing the training needs occasioned by such change.

2.148 The committee has some concerns about how effectively CASA senior management has communicated with CASA staff and the industry during this sustained period of change. The committee considers that many of the complaints levelled at CASA throughout the course of this inquiry can be attributed, in part at least, to poor communication about the change process. The committee notes that implementing a different regulatory philosophy, and achieving the necessary cultural change within the organisation and the industry to support it, is a long term undertaking. However, the committee is concerned at the apparent extent of resistance that remains within the organisation after five years of change management and such a significant turnover of staff.

2.149 The committee also notes the evidence it received which suggests that this has translated into a level of confusion and uncertainty within CASA and the industry. The committee believes that CASA must carefully examine its internal and external communications in the interests of providing clearer direction and leadership to both its staff and the industry it regulates.

2.150 The committee notes that this latter point was considered by the Aviation Regulation Review Taskforce and concurs with the Taskforce recommendation that 'accessible progress reports are provided to industry' in relation to regulatory changes.[156]The committee is also aware that submitters to this inquiry would like to see a greater degree of communication from CASA about the implementation of organisational and operational changes and would prefer a more active engagement of stakeholders as part of this process.

2.151 The committee notes the frustration among submitters in relation to the very slow progress with the Regulatory Review Program (RRP) to date. The committee also notes the criticism of many submitters that there has been only limited progress in this key area in recent years. The committee understands that more recently the limited availability of drafting resources has compounded the problem, but also acknowledges the view put by some submitters that the execution of large scale organisational change within CASA has had the unintended consequence of compromising progress on key projects like the RRP. The committee notes that most of the work completed to date on RRP has been undertaken prior to 2005.

2.152 The committee concurs with the findings of the Aviation Regulation Review Taskforce and concurs with its recommendation that the Minister and CASA commit to achieving completion of the development of the priority Regulatory Parts by submitting all drafting instructions to OLDP by the end of 2008 and work toward full implementation of these Parts by 2011.

Effectiveness of CASA's governance structure

2.153 Evidence presented to the committee suggests that there is some concern within CASA regarding the current management of CASA. Certainly the committee received submissions from former staff critical of the current management and direction of the organisation. This is perhaps not entirely unexpected for an organisation that has undergone such a significant change management exercise as is the case with CASA.

2.154 The committee accepts that on occasion criticisms from former staff members, particularly in the context of sometimes acrimonious departures by those staff members, are tinged with bitterness and may not be safely relied upon. However, when a former high level member of the executive team presents compelling evidence to the committee, the committee must consider that evidence carefully. Mr Peter Ilyk was such a witness.

2.155 The committee has had the opportunity of observing Mr Ilyk's performance before Senate Estimates and other Senate inquiries. The committee is also aware that, in February 2006, Mr Byron described Mr Ilyk in the following terms in support of his nomination as the Australian Representative on the Council of ICAO:

I regard Peter as an astute and experienced senior executive who exhibits high standards of integrity and professionalism. He is a clear thinker with a rational and reasoned approach to complex issues.....

...

He has consistently shown himself to be fully committed to the interests of CASA.....

...

He is an active contributor to internal corporate planning strategic sessions and I have come to respect his judgement on matters of strategy and issue analysis.....

...

My confidence in Peter's integrity and understanding of corporate governance principles is perhaps best illustrated by the fact that in addition to his line management responsibilities in Legal Services. He has been my senior adviser on matters of governance.....

...

Peter's long experience at senior levels in CASA and its predecessor have given him a comprehensive understanding of the issues, politics and complexities of the Australian aviation industry.[157]

2.156 The committee has also had the opportunity of observing Mr Ilyk's performance before Senate Estimates and other Senate inquiries. The committee finds his criticisms of CASA under Mr Byron's leadership quite disturbing. The committee concludes that his concerns cannot be dismissed. The committee notes that Mr Ilyk did seek to point out shortcomings in the reform of CASA under Mr Byron and that Mr Byron appears to have declined to seriously consider those concerns. The committee concludes that, despite warnings that the reform program was ignoring the lessons of the findings of the Coronial Inquiry into the crash of Monarch Airlines VH-NDU, the Seaview Air Royal Commission and the findings of this Senate committee in its inquiry into the administration of CASA and matters related to ARCAS Airways inquiry,[158] the reform program continued regardless. The committee is not satisfied that CASA has properly considered all the possible consequences of its current reform program. In this context, the committee notes submissions during this inquiry that the establishment of a board within CASA would strengthen CASA's strategic direction and decision making and would ensure that future reforms are accompanied by rigorous evaluation of the risks and benefits.

2.157 The committee considers that many of the complaints levelled at CASA throughout the course of this inquiry suggest that it is timely for the government to be considering avenues for improving CASA’s governance structures. The committee makes particular note of calls for the

reintroduction of a board structure within CASA and concurs with suggestions that a board would enhance CASA's governance and accountability. The board should reflect a diverse range of experience and knowledge relevant to the management of Australia's aviation safety regulator.

Strengthening CASA's relations with industry

2.158 The committee acknowledges the steps CASA has taken to date to enhance its consultation processes and considers that CASA should continue to strive for more effective engagement with all sectors of the industry, not just those who represent certificate holders. In particular, the committee notes the recommendations of the Aviation Regulation Review Taskforce that:

- the government's aviation agencies review and enhance existing consultation arrangements and implement new procedures where warranted to ensure transparency and adequate industry awareness of new initiatives; and

- CASA should monitor the regulation development process using joint CASA/industry teams and continue to review the role of the Standards Consultative Committee in the process, in order to achiever further effectiveness and efficiency gains.[159]

2.159 The committee notes CASA has taken steps to investigate serious allegations relating to its North Queensland office. The committee hopes that, in the interests of achieving regulatory consistency, CASA will extend this investigation to other offices that have been the subject of complaints regarding uneven and inappropriate dealings with industry.

2.160 The committee has noted the concerns raised in relation to CASA's implementation of its safety management systems approach and its use of risk management in the deployment of resources. The committee also notes the concerns raised in relation to CASA's decision to operate as a partner with the aviation industry. The committee considers that the recent reviews of CASA's North American counterparts should sound a timely note of caution in this regard.

2.161 While the committee notes CASA's assurances regarding its approach to the implementation of SMS and risk based regulation, the committee remains concerned that CASA appears to be falling short of achieving an appropriate balance between systems audit and specific operational surveillance. In particular, CASA's recent response to the increased incidence of maintenance issues at Qantas causes the committee some concern. The committee considers that recent statements by CASA executives are indicative of a somewhat blasé approach to this spate of maintenance issues. Mr Quinn, Deputy Chief Executive Officer of Operations at CASA said at a recent press conference:

> An engine shutdown on a four engine aircraft is not a really significant safety event. Qantas have a safety management system that is able to manage these sort of things. The pilots are trained, of course, primarily in handling these sort of emergencies such as Manilla, a very normal situation there. So I'm not overly concerned about these sort of things.[160]

2.162 The committee notes that while CASA's audit of Qantas' operations did not find any evidence that this recent spate of incidents are the result of systemic failure, CASA does not appear satisfied with its current surveillance of Qantas. CASA now proposes to undertake a health check of the airline. The committee notes that this health check will '... go from the documentation, as to how the maintenance program works on these aircraft, how its being implemented and how the documentation process exists in the organisation to the nuts and bolts type aspect of actually reviewing the aircraft and going through the process of confirming that the programs that are directed in the documents are actually in place on the aircraft.' [161]

2.163 CASA states that this 'health check' will guarantee CASA's confidence and the confidence of the travelling public. The committee considers this approach as a reactive rather than a proactive approach to the discharge of the regulator's responsibility. The committee would have greater confidence if the regulator were more in touch with the maintenance processes of major airlines than it clearly is. The committee notes CASA's concession that the industry is under enormous strain due to the increased fuel prices, and recent industrial activity.[162] The committee also notes that CASA believes that Qantas may need to address questions of accountability and responsibility in relation to its maintenance program. The committee considers that a more prudent regulator would satisfy itself that clear lines of accountability and responsibility exist prior to the delegation of responsibility rather than wait for obvious evidence of failure of self regulation before embarking on a more hands on regulatory role.

2.164 Finally, the committee notes that one of the recurring themes in the evidence received during this inquiry is that CASA is aware of the problems raised and has initiated steps to address them. Without wanting to appear unduly cynical, this is a response that this committee is all too familiar with, particularly through its Senate estimates hearings. However, against the back drop of the Government's Aviation White Paper, the committee has every expectation that key changes will be addressed in the short to medium term and to the benefit of the Australian flying public. The committee will continue to monitor CASA's progress in each of these areas in forthcoming estimates hearings.

Recommendation 1

The committee recommends the Australian Government strengthen CASA's governance framework and administrative capability by:

- introducing a small board of up to five members to provide enhanced oversight and strategic direction for CASA; and

  an impotent and easily manipulated group with questionable experience in aviation safety issues. A buffer between the Safety Manager (CEO) and the Minister.

- undertaking a review of CASA's funding arrangements to ensure CASA is equipped to deal with new regulatory challenges.

  On what has any change in funding been spent. No-one can tell me how it has improved safety.

Recommendation 2

The committee recommends, in accordance with the findings of the Hawke Taskforce, that CASA's Regulatory Reform Program be brought to a conclusion as quickly as possible to provide certainty to industry and to ensure CASA and industry are ready to address future safety challenges.

The so-called reforms mooted by Bruce Byron are still being mooted or very few have been implemented at a snail's pace. The is a common strategy to write and implement regulations AFTER an incident has occurred.

Recommendation 3

2.165 The committee recommends that the Australian National Audit Office audit CASA's implementation and administration of its Safety Management Systems approach.

What does anyone know about this? The CEO says it's happening. Who is receiving any reports and how long will the audit take?

Senator Glenn Sterle
Chair

APPENDIX 3 Views from a senior, experienced pilot in CA.

My personal view for both low capacity and high capacity RPT is a minimum of 1,500 hours experience for both crew members.

The requirements for Pilot in Command on Low Capacity (less than 30 seats) Regular Public Transport seem at first glance to be more stringent than for high capacity RPT. There is no defined minimum experience for co pilots in either category.

The dividing line for pilot licence category, Commercial or Air Transport Pilot Licence is take off weight either below (CPL) or above (ATPL) 5,700 kgs.

The issue of an ATPL require a minimum of 1,500 hrs experience, so provided both crew members hold an ATPL there is no problem.

High capacity RPT at present require the commander to hold an ATPL, not so for the co pilot. Often the co pilot is only a CPL holder.

This is an anomaly as the co pilot may be required to be the commander in the event of the pilot in command becoming incapacitated.

This is one of the reasons for two crew operations.

To sum up, there is no specified minimum experience for a co pilot in either category of RPT.

The desirable minimum experience requirement for both categories could be met if both crew members were required to hold an ATPL.

Not only would the flight experience level be satisfied, but the theoretical knowledge required of an ATPL holder provides extra operational safety.

The downside is that a CPL holder needs to spend longer in charter or night freight operations to reach the minimum hours required for ATPL issue.

The "Pay for your own training" espoused by Jet Star and Virgin may preclude vocationally suitable pilots as they make way for financially capable but maybe not so vocationally inclined pilots.

Being able to "buy" a job does not seem any better than the nepotism practised in Asian carriers and may not ensure that the right calibre of pilot is always selected.

APPENDIX 4 **(for general reference)**

The sky over the Senate goes dark with circling airline executives and angry pilots

October 29, 2010 – 6:08 pm, by Ben Sandilands

A Senate inquiry into airline flight crew training and standards in Australia has turned into a last ditch stand by 'the old Qantas' culture of life time highly experienced company pilots against 'the new' Jetstar culture of low experience short term piloting 'solutions'.

The Qantas Group had already completed a major and detailed rebuttal of the submission lodged by the Australian and International Pilots Association (AIPA), which is the main union for Qantas and Jetstar pilots, in time for Thursday's original deadline for lodgement with the Rural Affairs and Transport Committee, and that deadline has since been extended to allow for additional submissions at large.

A spokesperson for Tiger Airways said this afternoon that it would also engage with the inquiry and co-operate in every way. It remains unclear whether the Virgin Group will participate, however what is clear is that a significant discussion about pilot training, pilot experience and pilot safety issues is likely to occur during the inquiry instigated by independent SA senator, Nick Xenophon.

The AIPA document, **published** last night by Plane Talking, goes to the heart of its long standing claims that Qantas, through its low cost subsidiary Jetstar, is disconnecting itself from the high piloting standards of the past in the pursuit of younger inexperienced 'generation

Y' pilots, who will bend to a cost cutting culture that has lower respect for rules or standards, and thus imperils the level of safety that travellers expect from Australian carriers.

It is a given that the Qantas submission will strongly contest AIPA's claims, literally line by line where it sees it as necessary.

The opposed management and union submissions may well inflame the generational 'cultural' gap that is evident in the flying game between the expectations and commitments of younger and older pilots.

However the Qantas case will be tested by the recent US decision to outlaw the hiring of low flight time pilots with the same levels of inexperience as that which is tolerated by current Australian regulations and which forms a key part of the Jetstar and Tiger low cost business model.

If pilot inexperience is now illegal in new hirings in US airlines yet legal in Australian carriers, who is right and who is wrong? What makes a substantially simulator and theory trained pilot with 200 hours flying experience safe to fly an Australian jet, but unsafe to fly an American jet?

The pilot union argument is that hands on real world flying experience is the difference, and that the low cost route to sourcing less experienced pilots is a recipe for a disaster.

The AIPA submission, as already reported earlier in Plane Talking, is full of unpleasant disclosures for air travellers, including its pointing out that current junior pilot hirings in Australia can count time flying gliders as part of their experience, and that new style managements are instructing pilots to keep their hands off manual flying, and rely on modern automated flight systems for all but a matter of minutes in flights lasting hours.

The not so subtle sub text of the AIPA case is that 'modern' airline managements despise the legacy of highly experienced pilots on high pay, and have unduly outsourced the tick-the-box simulator dominated training courses for young low pay recruits to third party providers who are allegedly compromised by their commercial relationships with the carriers.

It also argues that as Australian regulations do not define the experience levels required for promotion to captain, a dangerous situation is arising where low time captains and even lower flight time first officers are being put together in the cockpit of jet airliners lacking the hands on experience to deal with unexpected situations brought about by systems failures or severe weather conditions or other abnormal circumstances.

The pilot submission concludes with its arguments in support of a private members bill, also introduced by Senator Xenophon, which would impose criminal sanctions on airlines or staff that evade their responsibilities to report safety incidents or use ‘cultural pressure’ to silence pilots concerned about safety related issues.

This goes directly to claims that latter day high cost and low cost carrier cultures encourage pilots to work around rather than to the rules, something that has in recent years lead to such bizarre incidents as a British Airways 747 flying right across the US and North Atlantic on only three engines, or a REX turbo prop flying most of the way from Wagga Wagga to Sydney on only one engine, a gamble that the ATSB not only ignored, but offered excuses for on behalf of the airline.

If the AIPA claims are correct, this is the best and last chance Australia has of reversing unsafe developments in airline piloting standards that will lead to a major disaster for an Australian airline.

3.2.1 Contributing factors relating to occurrence events and individual actions

- The crew commenced the Lockhart River Runway 12 RNAV (GNSS) approach, even though the crew were aware that the copilot did not have the appropriate endorsement and had limited experience to conduct this type of instrument approach.
- The descent speeds, approach speeds and rate of descent were greater than those specified for the aircraft in the *Transair Operations Manual*. The speeds and rate of descent also exceeded those appropriate for establishing a stabilised approach.
- During the approach, the aircraft descended below the segment minimum safe altitude for the aircraft's position on the approach.
- The aircraft's high rate of descent, and the descent below the segment minimum safe altitude, were not detected and/or corrected by the crew before the aircraft collided with terrain.
- The accident was almost certainly the result of controlled flight into terrain.

3.2.2 Contributing factors relating to local conditions

- The crew probably experienced a very high workload during the approach.
- The crew probably lost situational awareness about the aircraft's position along the approach.
- The pilot in command had a previous history of conducting RNAV (GNSS) approaches with crew without appropriate endorsements, and operating the aircraft at speeds higher than those specified in the *Transair Operations Manual*.
- The Lockhart River Runway 12 RNAV (GNSS) approach probably created higher pilot workload and reduced position situational awareness for the crew compared with most other instrument approaches. This was due to the lack of distance referencing to the missed approach point throughout the approach, and the longer than optimum final approach segment with three altitude limiting steps.
- The copilot had no formal training and limited experience to act effectively as a crew member during a Lockhart River Runway 12 RNAV (GNSS) approach.

3.2.3 Contributing factors relating to Transair processes

- Transair's flight crew training program had significant limitations, such as superficial or incomplete ground-based instruction during endorsement training, no formal training for new pilots in the operational use of GPS, no structured training on minimising the risk of controlled flight into terrain, and no structured training in crew resource management and operating effectively in a multi-crew environment. (*Safety Issue*)
- Transair's processes for supervising the standard of flight operations at the Cairns base had significant limitations, such as not using an independent approved check pilot to review operations, reliance on passive measures to

detect problems, and no defined processes for selecting and monitoring the performance of the base manager. (*Safety Issue*)

- Transair's standard operating procedures for conducting instrument approaches had significant limitations, such as not providing clear guidance on approach speeds, not providing guidance for when to select aircraft configuration changes during an approach, no clear criteria for a stabilised approach, and no standardised phraseology for challenging safety-critical decisions and actions by other crew members. (*Safety Issue*)
- Transair had not installed a terrain awareness and warning system, such as an enhanced ground proximity warning system, in VH-TFU.
- Transair's organisational structure, and the limited responsibilities given to non-management personnel, resulted in high work demands on the chief pilot. It also resulted in a lack of independent evaluation of training and checking, and created disincentives and restricted opportunities within Transair to report safety concerns with management decision making. (*Safety Issue*)
- Transair did not have a structured process for proactively managing safety-related risks associated with its flight operations. (*Safety Issue*)
- Transair's chief pilot did not demonstrate a high level of commitment to safety. (*Safety Issue*)

ontributing factors relating to the Civil Aviation Safety uthority's processes

- CASA did not provide sufficient guidance to its inspectors to enable them to effectively and consistently evaluate several key aspects of operator management systems. These aspects included evaluating organisational structure and staff resources, evaluating the suitability of key personnel, evaluating organisational change, and evaluating risk management processes. (*Safety Issue*)
- CASA did not require operators to conduct structured and/or comprehensive risk assessments, or conduct such assessments itself, when evaluating applications for the initial issue or subsequent variation of an Air Operator's Certificate. (*Safety Issue*)

ther safety factors

n 'other safety factor' is defined as a safety factor identified during an occurrence vestigation which did not meet the definition of contributing safety factor but was ill considered to be important to communicate in an investigation report.

ther factors relating to local conditions

- There was a significant potential for crew resource management problems within the crew in high workload situations, given that there was a high trans-cockpit authority gradient and neither pilot had previously demonstrated a high level of crew resource management skills.

- The pilots' endorsements, clearance to line operations, and route checks did not meet all the relevant regulatory and operations manual requirements to conduct RPT flights on the Metro aircraft.
- Some cockpit displays and annunciators relevant to conducting an instrument approach were in a sub-optimal position in VH-TFU for useability or attracting the attention of both pilots.

3.3.2 Other factors relating to instrument approaches

- Based on the available evidence, the Lockhart River Runway 12 RNAV (GNSS) approach design resulted in mode 2A ground proximity warning system alerts and warnings when flown on the recommended profile or at the segment minimum safe altitudes. (*Safety Issue*)
- The Australian convention for waypoint names in RNAV (GNSS) approaches did not maximise the ability to discriminate between waypoint names on the aircraft global positioning system display and/or on the approach chart. (*Safety Issue*)
- There were several design aspects of the Jeppesen RNAV (GNSS) approach charts that could lead to pilot confusion or reduction in situational awareness. These included limited reference regarding the 'distance to run' to the missed approach point, mismatches in the vertical alignment of the plan-view and profile-view on charts such as that for the Lockhart River runway 12 approach, use of the same font size and type for waypoint names and 'NM' [nautical miles], and not depicting the offset in degrees between the final approach track and the runway centreline. (*Safety Issue*)
- Jeppesen instrument approach charts depicted coloured contours on the plan-view of approach charts based on the maximum height of terrain relative to the airfield only, rather than also considering terrain that increases the final approach or missed approach procedure gradient to be steeper than the optimum. Jeppesen instrument approach charts did not depict the terrain profile on the profile-view although the segment minimum safe altitudes were depicted. (*Safety Issue*)
- Airservices Australia's instrument approach charts did not depict the terrain contours on the plan-view. They also did not depict the terrain profile on the profile-view, although the segment minimum safe altitudes were depicted. (*Safety Issue*)

3.3.3 Other factors relating to Transair processes

- Transair's flight crew proficiency checking program had significant limitations, such as the frequency of proficiency checks and the lack of appropriate approvals of many of the pilots conducting proficiency checks. *(Safety Issue)*
- The *Transair Operations Manual* was distributed to company pilots in a difficult to use electronic format, resulting in pilots minimising use of the manual. (*Safety Issue*)

Other factors relating to regulatory requirements and guidance

- Although CASA released a discussion paper in 2000, and further development had occurred since then, there was no regulatory requirement for initial or recurrent crew resource management training for RPT operators. (*Safety Issue*)
- There was no regulatory requirement for flight crew undergoing a type rating on a multi-crew aircraft to be trained in procedures for crew incapacitation and crew coordination, including allocation of pilot tasks, crew cooperation and use of checklists. This was required by ICAO Annex 1 to which Australia had notified a difference. (*Safety Issue*)
- The regulatory requirements concerning crew qualifications during the conduct of instrument approaches in a multi-crew RPT operation was potentially ambiguous as to whether all crew members were required to be qualified to conduct the type of approach being carried out. (*Safety Issue*)
- CASA's guidance material provided to operators about the structure and content of an operations manual was not as comprehensive as that provided by ICAO in areas such as multi-crew procedures and stabilised approach criteria. (*Safety Issue*)
- Although CASA released a discussion paper in 2000, and further development and publicity had occurred since then, there was no regulatory requirement for RPT operators to have a safety management system. (*Safety Issue*)
- There was no regulatory requirement for instrument approach charts to include coloured contours to depict terrain. This was required by a standard in ICAO Annex 4 in certain situations. Australia had not notified a difference to the standard. (*Safety Issue*)
- There was no regulatory requirement for multi-crew RPT aircraft to be fitted with a serviceable autopilot. (*Safety Issue*)

Other factors relating to CASA processes

- CASA's oversight of Transair, in relation to the approval of Air Operator's Certificate variations and the conduct of surveillance, was sometimes inconsistent with CASA's policies, procedures and guidelines.
- CASA did not have a systematic process for determining the relative risk levels of airline operators. (*Safety Issue*)
- CASA's process for evaluating an operations manual did not consider the useability of the manual, particularly manuals in electronic format. (*Safety Issue*)
- CASA's process for accepting an instrument approach did not involve a systematic risk assessment of pilot workload and other potential hazards, including activation of a ground proximity warning system. (*Safety Issue*)

SAFETY ACTIONS!

4.2.4 Processes for assessing an operator's risk profile

Safety issue

CASA did not have a systematic process for determining the relative risk levels of airline operators.

This issue was discussed in the analysis section of the draft report but was not listed as a safety issue. However, it has now been included as a safety issue following assessment of comments on the draft report.

ATSB assessment

ATSB safety recommendation R20070004

The Australian Transport Safety Bureau recommends that the Civil Aviation Safety Authority address this safety issue.

4.2.5 Guidance for evaluating the useability of operations manuals

Safety issue:

CASA's process for evaluating an operations manual did not consider the useability of the manual, particularly manuals in electronic format.

Response from Civil Aviation Safety Authority

Date received: 23 March 2007

> CASA is currently undertaking a project to evaluate and implement the Joint Airworthiness Requirements – Operations (European Union Regulations) philosophy of Operations Manuals. Whilst it is not intended that the format will be prescribed, appropriate guidance material will be introduced.

ATSB assessment of response

The ATSB acknowledges CASA's intention to address this safety issue.

As a result of this advice of proposed safety action by CASA, the ATSB will continue to monitor its progress until evidence is received of the implementation of the proposed safety action.

4.2.6 Processes for validating instrument approaches

Safety issue

CASA's process for accepting an instrument approach did not involve a systematic risk assessment of pilot workload and other potential hazards, including activation of a ground proximity warning system.

Response from Civil Aviation Safety Authority

Date received: 23 March 2007

CASA's current processes for periodic revalidation of instrument approaches specifically address pilot workload and other potential hazards.

The approach design and validation methodology adopted in Australia is ICAO compliant (see Doc 8071 – in which Australia participated in the development) and uses GPS United States Federal Aviation Administration TSO receivers. These standards have all been subject to international (risk assessment) review and acceptance during their development, and are therefore not included in the approach validation process.

The validation requirements do necessitate the consideration of other potential hazards (refer Doc 8071 and MOS). This process is part of the overall procedure design and implementation methodology as defined by ICAO.

ATSB assessment of response

The ATSB acknowledges that although CASA may consider pilot workload and potential hazards during instrument approach revalidation, it does not intend to include such assessments in the original validation process. In addition, hazards currently assessed in the flight validation are very limited. In particular, the flight validation process does not systematically consider hazards such as GPWS activation, potential influence of turbulence, the nature of terrain information provided on the approach chart, and the nature of terrain close to the approach path.

ATSB safety recommendation R20070005

The ATSB recommends that the Civil Aviation Safety Authority address this safety issue.

Regulatory requirements for crew resource management training

Safety issue

Although CASA released a discussion paper in 2000, and further development had occurred since then, there was no regulatory requirement for initial or recurrent crew resource management training for RPT operators.

Response from Civil Aviation Safety Authority

Date received: 23 March 2007

Regulations mandating Crew Resource Management (CRM) for RPT operators are in development. However, operators have all been strongly encouraged to adopt CRM training through a variety of methods and industry consultation.

CASA has current projects to enhance guidance material on standard operating procedures, Human Factors (HF) / CRM and crew cooperation in multi-crew operations. CASA has used material (HF and CRM) from the draft Civil Aviation Safety Regulation Part 121 in order to develop appropriate advisory material (see http://rrp.casa.gov.au/casrcreate/121.asp for more information on Part 121).

ATSB assessment of response

The ATSB notes that CASA is working towards implementing the Civil Aviation Safety Regulation Part 121 and is implementing measures in the interim to encourage and help operators to establish crew resource management training.

The ATSB acknowledges CASA's intention to address this safety issue. As a result of this advice of proposed safety action by CASA, the ATSB will continue to monitor its progress until evidence is received of the implementation of the proposed safety action.

4.2.8 Regulatory requirements for multi-crew training

Safety issue

There was no regulatory requirement for flight crew undergoing a type rating on a multi-crew aircraft to be trained in procedures for crew incapacitation and crew coordination, including allocation of pilot tasks, crew cooperation and use of checklists. This was required by ICAO Annex 1 to which Australia had notified a difference.

Response from Civil Aviation Safety Authority

Date received: 23 March 2007

> Regulations are currently being developed to mandate these requirements and when enacted will result in a withdrawal of the notified difference.

ATSB assessment of response

The ATSB acknowledges CASA's intention to address this safety issue. As a result of this advice of proposed safety action by CASA, the ATSB will continue to monitor its progress until evidence is received of the implementation of the proposed safety action.

4.2.9 Regulatory requirements for instrument approach qualifications

Safety Issue

The regulatory requirements concerning crew qualifications during the conduct of instrument approaches in a multi-crew RPT operation was potentially ambiguous as to whether all crew members were required to be qualified to conduct the type of approach being carried out.

ATSB safety recommendation R20060002

Date issued: 24 January 2006

> The Australian Transport Safety Bureau recommends that the Civil Aviation Safety Authority review and clarify the legal requirements concerning the qualifications for two-crew (pilot) operation during the conduct of instrument approaches in air transport operations. The review should assess the safety benefit arising from ensuring that when an instrument approach is conducted in an aircraft required to be operated by a two-person flight crew, both flight crew members are qualified to conduct the type of approach being carried out.

Response from Civil Aviation Safety Authority

The Civil Aviation Safety Authority advised the ATSB on 3 April 2006 that it has amended Civil Aviation Order 40.2.1, Instrument Ratings, to clarify the requirement for all instrument rating holders to hold an endorsement for any navigation aid being used to navigate an aircraft (including instrument approaches of which they are a crew member. The amendment does, however, provide an exemption for copilot crew members who do not hold an endorsement but have received equivalent training and demonstrated proficiency in the use of the navigation aid while participating in an operator's cyclic training and proficiency programme. The amendment became effective on 25 March 2006.

On 23 November 2006 CASA also advised the following:

> Following reviews by CASA following the Lockhart River accident, and supported by information contained in the ATSB interim factual report of December 2005, CASA amended the regulatory requirements relating to the qualifications for two pilot instrument approaches in air transport operations. Instructions have been issued to CASA field staff regarding instrument rating requirements and practices for smaller regional airline operators.

ATSB assessment of response

Recommendation Status: Closed - Accepted

4.2.10 Guidance for content of an operations manual

Safety issue

CASA's guidance material provided to operators about the structure and content of an operations manual was not as comprehensive as that provided by ICAO in areas such as multi-crew procedures and stabilised approach criteria.

Response from Civil Aviation Safety Authority

Date received: 23 March 2007

> Guidance material in the form of an advisory circular on multi-crew operations, which includes such contemporary safety issues as threat and error management and stabilised approaches, is in its final stages of development.

> Australia remains active on the ICAO Operations Control Panel with regards to global standards and recommended procedures including those that apply to subjects such as operations manuals, multi-crew procedures and stabilised approaches.

ATSB assessment of response

While the ATSB acknowledges CASA's intention to issue an advisory circular on multi-crew operations, the safety issue relates more broadly to the structure and content of operations manuals.

ATSB safety recommendation R20070006

The Australian Transport Safety Bureau recommends that the Civil Aviation Safety Authority address this safety issue.

4.2.11 Regulatory requirements for safety management systems

Safety issue

Although CASA released a discussion paper in 2000, and further development and publicity had occurred since then, there was no regulatory requirement for RPT operators to have a safety management system.

International Civil Aviation Organization requirements

On 17 July 2006, ICAO amended Annex 6 to include requirements for safety management systems. The Annex stated that, as of 23 November 2006:

> States should require, as part of their safety programme, that an operator implements a safety management system acceptable to the State of the Operator that, as a minimum:
>
> a) identifies safety hazards;
>
> b) ensures that remedial action necessary to maintain an acceptable level of safety is implemented;
>
> c) provides for continuous monitoring and regular assessment of the safety level achieved; and
>
> d) aims to make continuous improvements to the overall level of safety.

The Annex also stated that, from 1 January 2009, the recommendation would become a standard.

Response from Civil Aviation Safety Authority

Date received: 23 March 2007

> CASA recommends that operators have safety management systems in place at the entry control point. At present, the only head of power for CASA to ensure an operator conducts its operations with a reasonable degree of care and diligence is a general provision in section 28BE of the *Civil Aviation Act 1988*, which provides, relevantly:

APPENDIX M: MEDIA RELEASE

Final ATSB investigation report on Lockhart River 15-fatality aviation accident

The ATSB has released a 500-page final report into Australia's worst civil aviation accident since 1968. The report spells out contributing safety factors involving the pilots, the operator and the regulator as well as other safety factors, and has made further recommendations to improve future safety.

An Australian Transport Safety Bureau team of a dozen investigators has taken nearly two years of painstaking investigation to complete the final report since the tragic accident on 7 May 2005 which killed both pilots and all 13 passengers. Three ATSB factual reports, a research report and ten safety recommendations were released in the interim. The investigation was complicated by an inoperative cockpit voice recorder, no witnesses, and the extent of destruction of the aircraft.

The ATSB found that a mechanically serviceable Metro 23 aircraft operated by Transair was unintentionally flown into South Pap ridge in poor weather during a satellite-based instrument approach, probably because the crew lost situational awareness in low cloud.

The experienced 40-year old pilot in command was very likely flying the aircraft but was reliant on the 21-year old copilot to assist with the high cockpit workload. He knew the copilot was not trained for this type of complex instrument approach. Despite the weather and copilot inexperience, the pilot in command also used approach and descent speeds and a rate of descent greater than specified in the *Transair Operations Manual*, and exceeded the recommended criteria for a stabilised approach. The pilot in command had a history of such flying.

The investigation found significant limitations with Transair's pilot training and checking, including superficial training before pilot endorsements and no 'crew resource management'. Deficiencies also existed in the supervision of flight operations and standard operating procedures for pilots. There were also significant limitations in the way Transair managed safety, Transair's management processes and because the chief pilot was over-committed with additional roles as CEO, the primary check and training pilot, and working regularly in Papua New Guinea.

The regulatory oversight was also not as good as it could have been, especially when Transair moved from a charter to a regular passenger transport operator and was growing rapidly in Australia. In addition to the serious pilot and company contributory factors, if CASA's guidance to inspectors on management systems and its risk assessment processes had been more thorough, the accident may not have occurred.

The ATSB investigation also identified a range of other safety issues which could not be as clearly linked to the accident because of limited evidence. These included shortcomings in the design of the navigation chart used and the possibility of poor crew communication in the cockpit.

The ATSB hopes that this final report will assist the families and friends of those who perished in this tragedy to move towards closure, and will lead to further improvements in aviation safety to ensure that such an accident never happens again.