QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the Aircraft Crash near Willowbank**
TITLE OF COURT:	**Coroner's Court**
JURISDICTION:	Brisbane
FILE NO(s):	Various
DELIVERED ON:	24 November 2008
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HEARING DATE(s):	30 April 2008, 16-19 June 2008
FINDINGS OF:	Mr Michael Barnes, State Coroner
CATCHWORDS:	**CORONERS: Inquest, aircraft accident, parachuting operations, oversight of tandem parachuting by CASA and the APF**

REPRESENTATION:

Counsel Assisting:	Mr Ian Harvey
Australian Parachute Federation:	Mr Tony Entriken (instructed by Landers & Rogers)
Civil Aviation Safety Authority:	Mr Andrew Luchich (instructed by CASA Legal department)
Australian Transport Safety Bureau:	Mr Tim Begbie (Australian Government Solicitor)
Mr Brian Scoffell:	Mr Rodney Lawson (Porter Davies Lawyers)

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The *Coroners Act 2003* provides in s45 that when an inquest is held, the coroner's written findings must be given to the families of the persons who died, each of the persons or organizations granted leave to appear at the inquest and to various specified officials with responsibility for the subject of any comments or recommendations. These are my findings in relation to the deaths caused by the Willowbank parachute air crash. They will be distributed in accordance with the requirements of the Act and posted on the website of the Office of the State Coroner.

Introduction

On 2 January 2006, a light aircraft transporting skydivers took off from a private airstrip near Willowbank in south-east Queensland. There were seven people on board – the pilot and three pairs of tandem jumpers. Shortly after take off the plane crashed, killing five of those on board.

These findings:

- confirm the identity of the deceased, the time, place and medical cause of their deaths;
- explain how the crash occurred;
- consider whether modifications made to the incident aircraft contributed to the crash; and
- consider whether any changes to the regulation of sky diving would reduce the likelihood of deaths occurring in similar circumstances in the future or otherwise contribute to public safety.

Background

Before making findings concerning the cause of the crash, it is necessary to set the scene by describing the skydiving operation, the experience of the pilot, the condition of the plane, the eyewitness accounts of the crash and the findings of the Australian Transport Safety Bureau (ATSB) and the Queensland Police Service (QPS) investigations.

The operator

The Brisbane Skydiving Centre commenced operating at Aratula on the Darling Downs in 1982 before moving to Willowbank in 2001. It used two Cessna aircraft in its parachuting operations – a Cessna 182 (VH-TMG) and the incident aircraft, a Cessna 206 (VH-YUB). One of the co-directors of Brisbane Skydiving Centre, Mr Brian Scoffell was the registered owner of both aircraft. His business partner and wife, Ms Angela Garvey, a licensed pilot, worked at the centre in various capacities.

The Brisbane Skydiving Centre attracted customers by advertising in the Yellow Pages, in various aviation magazines, by leaving brochures in backpacking hostels, and via an internet website.

It provided air transport for licensed qualified solo parachutists but a major part of its business involved tandem jumps. This activity involves qualified tandem masters harnessing unqualified jumpers to themselves so that the novices, who have received only a few minutes of pre-jump briefing, can experience a parachute jump without having to control the equipment: that is all taken care of by the tandem master.

Because trainee parachutists are required to be members of the Australian Parachute Federation (APF), part of the fee charged to the tandem jumpers is used to sign them up as temporary members of that federation.

On the day of the crash, tandem masters Brian Scoffell, Colin Hicklin and Nigel O'Gorman were undertaking these activities. The latter two had worked for the Brisbane Skydiving Centre in this capacity since 2001 and 2005 respectively.

The pilot

The pilot, Mr Anthony Winter, gained his private pilot's licence on 7 October 2003 and his commercial pilot's licence on 10 August 2005. He had a total of 401.5 hours flying experience and had flown the Cessna 206 for 41 hours at the time of the crash.

The commercial pilot license curriculum includes information about responding to a partial engine failure after takeoff (EFATO), but because of the danger of actually undertaking such a manoeuvre, no practical training in such emergencies was undertaken by Mr Winter.

Mr Winter had no previous experience flying parachuting operations and no commercial experience when he commenced with the Brisbane Skydiving Centre on 1 July 2005. When he commenced flying the Cessna 206 on parachuting sorties on 30 July, he had not yet accrued ten hours flying time on type as required by the APF operational regulations. However, Mr Scoffell considered he was sufficiently trained and capable of flying the Cessna 206. He said further that he had supervised and coached the pilot during several of his early parachuting flights.

It is clear that Mr Scoffell did not consider that, as the owner of the aircraft and the operator of the Brisbane Skydiving Centre, he had any formal training role; nor did he provide for any recurrent training or checking of pilots used in the business. Because the skydiving business was able to operate without an air operator's certificate (AOC), Mr Scoffell was not required to have a chief pilot appointed; nor were there any requirements for a Civil Aviation Safety Authority (CASA) approved testing officer or a check to line system to be employed.

The ATSB report notes there was no evidence that Mr Winter had completed a knowledge check on the incident aircraft in accordance with the APF's jump pilots handbook and aircraft operation procedures manual or that appropriately documented emergency procedures were available for the modified Cessna 2O6 aircraft.

Mr Scoffell said the operations manual, which included information concerning the variations to the handling and operation of the aircraft as a result of the modifications that had been made to it, was available in the aircraft and he assumed that Mr Winter had read it. He took no steps to ensure that this occurred.

I accept the submission of counsel assisting that Mr Winter was largely left to learn "*on the job*", while carrying parachutists in a single pilot operation, in a highly modified, old and overladen aircraft.

Mr Winter was not being paid for flying the incident aircraft. As is common in the aviation industry he was doing it free of charge to increase his hours in command with a view to professional advancement.

Mr Winter had last flown three days before the incident flight on 30 December 2005 when he flew for five hours.

There is no indication the pilot was fatigued or that his ability to fly the aircraft was in any way compromised. He was qualified to undertake the incident flight, but on any measure, Mr Winter was a relatively inexperienced pilot.

The aircraft

The aircraft was manufactured in the United States in 1965 and was operated for some time in New Zealand as a float plane. It was imported into Australia in 2002 and entered onto the Australian register on 23 August 2002. At the time of the accident the aircraft had accumulated 11,426.7 hours total time in service.

During the time it was operated by Mr Scoffell, the aircraft underwent a number of significant modifications.

In December 2002 a wing tip extension kit was installed in accordance with a United States Federal Aviation Administration (FAA) approved supplemental type certificate (STC). Although the manufacturers of the kit indicated it would affect the aircraft's performance, the aircraft's operations manual did not contain any information in relation to this issue.

In July 2003 a speed brake kit was installed, also in accordance with a FAA approved STC.

On 2 April 2004 the normally aspirated engine was replaced with a more powerful turbo charged engine. The modifications were made in accordance with an FAA approved STC, and included changes to the aircraft's engine bay, cowling, wiring and fuel system. It was designed to give the aircraft greater power.

An issue that arose during the investigation and inquest was whether those modifications contributed to the crash; I will deal with that in more detail later in these findings.

An examination of the aircraft maintenance logbooks indicates all stipulated inspections and appropriate maintenance were carried out when required.

Operations on the day of the incident flight

On the morning of 2 January 2006, Mr Winter arrived at the airstrip just before 8.00am. The weather was fine and clear with good visibility and minimal wind.

He flew the other aircraft, the Cessna 182, on a jump flight with the two tandem masters, Mr Hicklin and Mr O'Gorman and two passengers.

That flight was completed without incident and by 9.00am the aircraft and jumpers were back on the ground at the jump centre.

Mr Winter then conducted a pre-flight check of the Cessna 206 (VH-UYB) in preparation for the next parachuting sortie.

By this time, another Brisbane Skydiving Centre instructor, Mr Stewart Ware, had arrived at the airfield. He was intending to undertake a solo jump. During this period a number of other customers also arrived.

At about 10.00am the Cessna 206 took off with Mr Winter at the controls and Messrs Scoffell and O'Gorman with a tandem jumper each and Mr Ware jumping solo.

That flight was also completed without incident, and the aircraft was back on the ground adjacent to the jump centre shortly after 10:30am.

Pre flight briefing

By this time Ms Best, Mr and Mrs Williams had arrived at the facility.

Prior to boarding, the paying passengers were given a flying suit and harness. It was explained to them what would happen, how they should react when they were required to exit the plane and when approaching the ground. They sat in plastic chairs in the hangar and practised lifting their knees towards their chests.

They were required to sign a liability waiver and pay jump fees of $290 per person. Ms Best said she asked about the waiver and was told that it meant the passengers accepted responsibility for any injury they might suffer on landing or during the jump. She estimated the briefing took three minutes. She was adamant they were not told anything about how to get out of the plane in an emergency or what sort of emergencies they might encounter.

The incident flight

The plane was standing on the tarmac apron near the flight centre office and briefing area for ten to fifteen minutes between the completion of the previous flight and the take off of the incident flight.

During that time a number of people noticed the engine revolutions randomly increasing and decreasing. Some described it as surging. A number of people saw black exhaust smoke issuing from the engine and occasional puffs of blue smoke.

The pilot was seen to be in the cockpit and one witness assumed that he was causing the engine to do this by adjusting the throttle. Another witness who was familiar with the plane, Ms Garvey, thought this was “normal” for a turbo charged engine.

At about 10.45am the three tandem masters, Messrs Scoffell, Hicklin and O’Gorman, and the three passengers got into the aircraft through a roller door on the rear right hand side of the aircraft. The pilot, Anthony Winter, sat in the front left hand seat. All of the other seats had been removed to facilitate the aircraft being used for skydiving. Mr Hicklin sat where the co-pilot’s seat would have been, facing toward the back of the plane. In front of him was the novice skydiver he was to manage, Amanda Best. In front of her sat Barbara McLelland. Facing Mrs McLelland was her tandem master Mr Scoffell who, unlike the rest, was facing the front of the plane. Behind the pilot, on the left hand side of the aircraft, facing the rear of the plane was Mr O’Gorman and in front of him, his passenger, Susan Williams.

The aircraft taxied away from the office and went to the southern end of the runway. Mr Scoffell observed the pilot hold the plane under brakes until the appropriate engine revolutions and manifold pressure developed. The brakes were then released as maximum throttle was opened. Mr Scoffell says the plane accelerated as expected, and rotation/lift off occurred at about half way down the 1000 metre runway, as was normal. All witnesses, including Mr Scoffell, say that as the plane proceeded down the runway nothing seemed out of the ordinary or concerning.

Mr Scoffell says that when the plane was above the northern end of the runway at an altitude of about 100 feet, he felt it suddenly decelerate as if the throttle had been pulled back. However, when he looked at the controls he could see it was still in the maximum power position - fully forward.

This caused him to yell to the pilot, “*Is the fuel pump on?*” This was a reference to the electronic fuel pump that acts as an auxiliary if the fuel pump driven by the motor fails. The pilot confirmed that it was.

As the plane continued to fly away from the airstrip without gaining height, he heard the stall warning alarm sound which caused him to yell out to the pilot “*Don’t stall it”.* He then saw the pilot turn and look at him. As he could see a large gumtree near-by in front of the aircraft he yelled, “*Look out for the tree!*” The warning was too late. The right wing clipped the tree causing the plane to cartwheel. It crashed into a stock dam approximately 1250 metres north and slightly to the east of the end of the runway.

The rescue

Mr Scoffell managed to get out of the plane through the roller door opening. The door, which was closed before the takeoff roll commenced, was later found to have been torn off in the crash. He got to the surface and was standing on the right wing of the partially submerged plane. After a short period Colin Hicklin floated to the surface. He grabbed hold of Colin by the hair and pulled his head out of the water. Mr Hicklin was gurgling but unconscious.

A short time later, Ms West also came to the surface. She was conscious, but obviously dazed as she asked Mr Scoffell his name and wanted to know where the drop zone was.

He tried to persuade her to stay at the scene but she made her way to the edge of the dam and walked off heading towards the airstrip.

A short time later Mr Scoffell saw his Cessna 182 fly over the area. He was still holding on to Mr Hicklin and so couldn't wave to the plane. That plane was being flown by Ms Garvey who took off to search for the Cessna 206 soon after being told it had been seen to go down.

Shortly thereafter the Westpac Rescue helicopter landed near the dam and the crew assisted Mr Scoffell out of the water. Mr Hicklin was examined and found to be dead.

Soon after, two Queensland Ambulance Service units arrived at the scene. They were quickly followed by numerous police personnel. Ms Best, who was badly injured, was found wandering towards the airstrip.

The remaining four occupants of the plane were found dead inside when police divers searched the wreckage later that afternoon. Mrs McLelland was found near the roller door; Mrs Williams and Mr O'Gorman were found near where they had been seated for take off, they were tethered together by their jump harness; the pilot, Mr Winter, was found secured in his seat.

The investigation

Aspects of the crash were investigated both by the ATSB and the QPS. The principal police investigator, Sergeant Darryl Morrison, is an experienced aircraft crash investigator but he did not seek to establish the cause of the incident. Rather, he merely gathered statements from some of the eye witnesses and records for the use of the coroner.

QPS officers also arranged for the transporting of the bodies of the deceased persons to the John Tonge Centre for autopsy and formal identification. The evidence gathered by those procedures has enabled me to determine the cause of death and the identity of those who died in the crash.

The ATSB officers arranged for most of the wreckage to be recovered from the dam and they conducted an investigation in accordance with the

provisions of the *Transport Safety Investigation Act 2003.* Most significantly, this involved a tear down of the engine, a review of the maintenance and modification records of the aircraft, and testing of fuel recovered from the drum which had been used to fuel the plane before the incident flight.

I found both investigations to be thorough and competently undertaken. I commend those involved.

What caused the crash?

The ATSB experts concluded from their examination of the wreckage and the eyewitness accounts that the engine was still operating at the time of the crash, albeit not in a normal manner so as to generate sufficient power to enable the aircraft to fly away from the airstrip. It is clear the pilot was attempting to get the plane to climb and the crash did not occur because of any deliberate action or inaction on his part.

There was no suggestion that any airframe failure contributed to the crash, or that wind shear or other external forces were brought to bear on the aircraft.

I accept the primary cause of the crash was partial engine failure after take off.

It is unclear whether the plane stalled and clipped the tree while falling in an uncontrolled fashion or whether Mr Winter did not see the tree until too late, while he was attempting to steer the plane towards clearer ground. This may be more likely in view of Mr Scoffell's evidence that the buffeting which would usually be experienced immediately prior to the aircraft stalling did not occur on this occasion.

I have considered whether the intervention of Mr Scoffell in giving the pilot instructions and/or encouragement may have contributed to the pilot failing to take the best course of action which would have been to land as soon as possible, even if that meant putting down in a paddock where damage to the aircraft could be expected to result. Of course, had the engine shut down completely the pilot would have had no choice but to attempt an emergency landing. Because it kept operating, albeit with limited effectiveness, the temptation to try and find a landing site safer than the heavily wooded paddock encountered soon after the end of the runway, was understandable.

However, the question remains: why didn't the pilot land straight ahead as soon as the engine malfunction manifested when the plane was near the end of the runway when there was some 800 metres of reasonably clear land before the trees? It may be that Mr Scoffell did distract the pilot momentarily and encourage him to try and keep the plane in the air. Contrary to the submissions of CASA there is evidence from Mr Scoffell that the pilot was looking back at him just before the plane's right wing clipped the tree. However, I don't feel Mr Scoffell should be criticised for this. He was far more experienced than Mr Winter and no doubt felt a degree of responsibility for all on board. To expect him to remain silent in such precarious circumstances is unrealistic, in my view.

In retrospect, it may have been preferable for Mr Scoffell to have instructed Mr Winter to immediately make a forced landing. By its nature EFATO is not something student pilots can easily train for, and on this occasion Mr Winter had something less than thirty seconds to determine what he should do. Mr Winter's failure to take what in hindsight was the best option should not be criticised in the circumstances.

It seems the aircraft was loaded to 113 kilograms over its maximum take off weight. The ATSB considers this would not have materially affected the plane's flight and in their view it did not contribute to the crash. AeroMods, the designer of the modification involving the replacement of the engine, contests this and suggests being 7.5% overweight would have significantly affected the air worthiness of the plane. I accept the performance of the aircraft would have been degraded by it being overweight. That means it may not have crashed precisely when and where it did had it been operating within weight. However, I am also of the view the overloading was not the cause of the crash, and had the engine continued to operate normally the extra weight would not have prevented the aircraft from flying away from the airstrip. Further, I conclude that had the plane not been overweight it would still have crashed.

Conclusion

The plane crashed because it suffered a partial engine failure soon after take off and the pilot did not execute an emergency landing before the aircraft struck a tree and plummeted out of control.

Findings required by s45

I am required to find, as far as possible, who the deceased were, when and where they died, what caused the deaths and how they came by their deaths. I have already dealt with this last aspect of the matter, the manner or circumstances of the deaths. As a result of considering all of the material contained in the exhibits and the evidence given by the witnesses I am able to make the following findings in relation to the other aspects.

Identity of the deceased – The deceased persons were:-

Colin Peter Hicklin
Mr Hicklin was born on 9 April 1964, making him 41 at the time of the crash.

He completed school at Blue Coat Senior Boys School in Dudley, England and then undertook a course in information technology at Dudley Technical College.

He initially put these qualifications to use teaching computer skills to underprivileged youth before taking up employment with a major vehicle hire firm and later with BMW Finance.

Mr Hicklin involved himself in a range of different adventure activities. During a year spent travelling around Australia in his early thirties, Mr Hicklin found that he was able to pursue his main passion of skydiving more easily than at home. This led to several trips to Australia over the ensuing years and ultimately to his connection with Brisbane Skydiving, where he took up employment.

It is clear from messages posted on a website created in his memory, that he was widely known and liked. It is also clear, from the information provided to me by his parents that he was very much loved and is very much missed by his family.

Barbara Frederique McLelland
Mrs McLelland was born on 2 January 1966 and sadly died on her 40th birthday.

Mrs McLelland was born in France and immigrated to Australia with her parents when she was 11. After completing her senior schooling, Mrs McLelland developed a career in bookkeeping and at the time of her death had built up a successful bookkeeping business.

In 1990 she met her future husband David and they were married in 1992. They have two children, Christian and Olivia who were 11 and 4 respectively at the time of the accident.

Mrs McLelland had decided to undertake the parachute jump as something of a present to herself; indeed it had been something she had set as a 40th birthday goal many years earlier. Tragically Mr McLelland and their son Christian had attended the scene of the accident and witnessed the crash.

At the time of her death Mrs McLelland was part of a very happy and content family living at Nerang. She is remembered by those who knew her as a wonderful wife, mother, daughter and friend.

Nigel Dermot O'Gorman
Mr O'Gorman was born on 17 October 1971 making him 34 at the time of his death.

The second eldest of 5 children, Mr O'Gorman was born in Ireland and educated there by the Christian Brothers in Naas, County Kildare. After completing secondary school he spent five years in the Irish Navy where he trained as a chef. This was followed by a pursuit of his great love of travelling which saw him eventually settle in Australia in February 2001.

Mr O'Gorman's other great passion was skydiving. He held extensive qualifications in this from Australian, US and Irish certifying bodies. Indeed his expertise was such that he was engaged by the Royal Thai Police to train their personnel in skydiving and spent some time living in Thailand to undertake this role.

It is evident that Mr O'Gorman had an extremely adventurous outlook on life; had a wide circle of friends and that he is dearly missed by his partner, Ms McCormack, his parents, his brothers and sisters, and extended family.

Susanne Elaine Williams
Mrs Williams was born on 22 February 1956 and was 49 at the time of her death.

Mrs Williams was friends with Barbara McLelland having met her through art classes they had taken together. She had joined Mrs McLelland for the sky dive, along with one of the survivors of the crash, Amanda Best, as part of the celebrations for Mrs McLelland's 40th birthday.

Susanne had been married to her husband John for over 20 years at the time of the crash and was a full time mother to her children Carl, then 18 and Jo, then 16. Mr Williams, a member of the British Defence Forces had been posted to Canungra Army Base which is where Mrs Williams had been residing with her family in the lead up to the crash.

Mr Williams is currently in Italy, serving there with NATO forces, and this has created some difficulty in obtaining further details on Mrs Williams' background. However, it is clear that Mrs Williams had an adventurous spirit; her family often coming along to cheer her on in her endeavours, with this occasion being no different. There is no doubt that she was a much loved part of a very close family; with her loss leading to a very difficult time for her husband and children subsequent to the crash. I am told by Ms Best that she was widely liked, having developed a wide circle of friends in her time at Canungra.

Anthony Peter Winter
Mr Winter was born on 3 August 1983, the first child of Lawrie and Kathy Winter. He was 22 at the time of the crash.

Anthony completed his secondary schooling at Clairvaux McKillop College in Brisbane in 2000. While at school he was heavily involved in a range of extra-curricular activities including the Air Cadets. This led to him wanting to become a pilot and working long hours to fund flying lessons.

He was awarded his private pilot licence in October 2003. After much hard work he completed the academic requirements of his Bachelor of Aviation course at Griffith University in August 2005 and was granted his commercial licence.

It is evident he was much loved, and is fondly remembered by his parents and his brother, Tim.

Place of death – They all died at Willowbank in Queensland

Date of death – They all died on 2 January 2006

Cause of death – Mrs McLelland, Mr O'Gorman, Mrs Williams and Mr Winter died as a result of drowning due to or as a consequence of a light aircraft accident following submersion of the aircraft in the water of a dam.

Mr Hicklin died as a result of multiple injuries sustained in a light aircraft accident following impact of the aircraft with the water of a dam.

It is obvious that all of the people who died were much loved members of close families. I extend my sincere condolences to the bereaved.

Concerns, comments and recommendations

Section 46, in so far as it is relevant to this matter, provides that a coroner may comment on anything connected with a death that relates to public health or safety or ways to prevent deaths from happening in similar circumstances in the future.

In this case, the issues which warrant consideration from a prevention perspective are:-

- the cause of the engine malfunction;
- the oversight of the engine replacement; and
- the regulation of tandem parachuting.

What caused the partial engine failure?

The examination of the engine and related components and the testing of the fuel did not enable the investigators to identify the cause of the partial power loss during the incident flight. No defects were apparent in the engine, the ignition system, nor the fuel system. The initial ATSB report contained less than complete detail concerning the examination of the air intake system; and, indeed, it transpired that this could not have been complete because not all of the components had been recovered from the crash site. When asked for further details about this possible cause of the engine failure, the bureau insisted there was no evidence of any failure of the relevant components that appeared to have been installed in compliance with the STC authorising the turbo charging of the engine.

The fuel tests returned some results that were marginally outside normal specifications. This is likely to have been a result of the fuel being stored incorrectly in the open. However, I accept the ATSB's conclusion this could not explain the engine failure as had it done so, it is likely evidence of it would have been apparent in the fuel system when its components were examined. Conversely, I also acknowledge a degree of uncertainty among the experts consulted as to the vagaries of the effect of degraded fuel. I am satisfied that the aircraft was carrying sufficient fuel.

A possible cause of the crash explored at some length during the inquest was fuel vaporising in the fuel lines as a result of increased temperature under the engine cowl as a consequence of the plane idling on the ground while

stationary between flights. This possibility was considered because the operator of the incident aircraft told the ATSB that after the engine was replaced with the turbo charged engine, the problem had been encountered when the plane was taxiing. It came under further focus when the ATSB became aware another operator of the same type of aircraft with the same modifications had experienced such problems. That operator had gone to considerable lengths to eliminate the problem, including moving the electric fuel pump and adding cowl vents, after overheating had caused damage to some fuel system components and significantly retarded engine performance.

I am satisfied fuel vaporisation may have explained the surging and the puffs of smoke seen coming from the aircraft while it was on the ground near the hangar. However, as the engine was able to develop sufficient power to take off normally, it might be thought any interruption to fuel flow was eliminated when the throttle was fully opened, the electrical fuel pump was activated, the high engine revolutions increased the mechanical fuel pump pressure, cooler fuel flowed from the fuel tanks to the engine and the draught generated by the take off roll reduced the under-cowl temperature. Conversely, counsel assisting relevantly referred to the evidence of one of the experts called who said "*if the fuel system has been thoroughly heat soaked on the ground* (and, it might be added, by an earlier quick, high flight) *the time taken to reduce temperatures significantly may exceed the time necessary to become airborne".*

However, on balance, I do not consider I have sufficient evidence to find vapour lock was the cause of the engine malfunction.

I am satisfied the major modification on the incident aircraft involving the installation of a larger turbo charged engine was undertaken in accordance with the designer's stipulations and the STC, but as the designer points out, parachuting operations impose special demands on an aircraft because of the rapid steep climbs and short flights.

Contrary to the submissions of AeroMods, I consider I have no basis to find the maintenance organisation which undertook the installation of the replacement engine failed to comply with AD 91-08-07. The engineer has specifically referred to this in his work log. The failure to find the required vent restrictor during the engine tear down should be given little weight considering the condition of the engine and the fact that the investigator was not seeking this part. Further there is no evidence of any fuel pump seal failure that would have made the vent restrictor necessary. The ATSB investigator was adamant the testing of the pump would have detected any such breach in the seal.

Regrettably, I am unable to find with sufficient certainty the cause of the loss of power shortly after take off.

The modifications

Although the cause of the engine failure has not been identified, concern was raised that the installation of a different engine from that which was in the aircraft when it was built may have contributed to the crash. It is therefore

appropriate to consider whether the process by which this was authorised is adequate from a safety perspective.

For an aircraft to be placed on the Australian register it must have a type certificate that shows the aircraft meets the applicable airworthiness standards.

If a proposed change to an aircraft is not of such significance as to require an application for a new type certificate, a STC may issue, once CASA is satisfied the change won't unduly degrade the aircraft's airworthiness.

If a type certificate or a STC has been issued by an equivalent aviation authority in a "*recognised country*", CASA must accept it as if CASA had issued the STC itself. The United States of America is a recognised country.

As detailed earlier, the incident aircraft underwent a number of modifications, all of which were undertaken in accordance with US FAA STCs. Accordingly, CASA played no part in inspecting or approving these changes.

One of these modifications involved the installation of a larger, more powerful turbo charged engine in the aircraft. This took place some 468 operating hours prior to the crash. Mr Scoffell advised the ATSB that after the modification the aircraft was prone to fuel vaporising in the fuel line when operating on the ground. He therefore advised pilots to use the electric, auxiliary fuel pump when taxiing.

An issue arose during the inquest as to whether all of the detailed work required by the relevant STC and the subsequently issued Lycoming service bulletins and Airworthiness Directives had been done. I am satisfied that it was.

The engine replacement was the subject of an extensive investigation during the inquest because by then the ATSB and CASA had become aware of another aircraft that had undergone similar modifications. That aircraft, VH-TIB, experienced ongoing engine problems with fuel vaporisation following its importation into Australia. It too was being used in parachuting operations.

An aircraft maintenance engineer was engaged to effect substantial changes to the aircraft to address this problem.

As the parties readily acknowledge, the fact that one aircraft of a particular type suffers performance problems does not mean that another aircraft of the same type will necessarily suffer the same problems. However, it was illuminating to have regard to the history of the changes made to VH-TIB. It is also illuminating that the designer of the modifications, AeroMods, said in its statement to the court "*aircraft used in parachuting operations may require additional modifications to better assist their special needs".*

The experience of the operators of VH-TIB establishes that a Cessna 206 modified in accordance with the relevant STC can suffer from over heating

sufficient to damage fuel system components and the designer of the modifications now acknowledges that such problems can occur, yet there was no mention of them in the instructions approved under the STC nor was any change to the aircraft's operating manual suggested. This raises questions about the soundness of the *"recognised country*" STC acceptance processes.

The evidence indicates the ATSB and CASA are now alert to the safety issues associated with this particular STC and steps have been taken to raise the issue with the appropriate US authorities. This should include Aeromods suggestion that further modifications may be needed if the aircraft is to be used for parachuting activities. While this may, in the longer term, address problems that seem to have been identified in relation to this STC, I consider some action needs to be taken in the meantime to prevent other operators possibly coming to grief.

The evidence indicates that only four Cessna 206s have been modified in this way; one, VH-TIB, has undergone further remedial modification; the incident aircraft is no longer flying and the other two are not in Australia so far as the CASA is aware. Nevertheless, the numerous Australian operators of Cessna 206s need to be alerted to the risk of modifying their aircraft in this fashion.

Recommendation 1 – Advisory concerning STC SA 2123NM

I recommend that CASA issue an advisory bulletin alerting operators of Cessna 206 aircraft of the possible dangers of modifying those aircraft in accordance with STC 2123NM and the need to vary the manner in which the aircraft is operated if the modification has been made.

Of course, if CASA's discussions with the FAA substantiate the concerns about the safety of modifications made in accordance with this STC, it raises a much more far reaching issue of whether the Civil Aviation Safety Regulation that deems an STC issued by a *"recognised country"* to have been issued by CASA is in the interests of the Australian public. I have insufficient information to form a view on that. CASA submits even raising the issue is inappropriate but I am confident it will give the issue of this STC continuing consideration and investigation which will prompt its senior officers to think more freely, out of the public gaze, if the process in question is shown to have been defective.

The regulation of tandem parachuting

The unexplained crash and various aspects of the tandem parachuting operation and the incident flight cause concern from a safety perspective.

This requires that I consider whether the mechanisms that should ensure the activity is as safe as can reasonably be expected, are adequate. Those mechanisms are:-

- CASA's administration of the safety regime created by the *Civil Aviation Act 1988* (CAA);
- the oversight by the Australian Parachute Federation; and
- the operator's safety management systems.

I shall deal with them separately.

CASA

Introduction

CASA's role in supervising or oversighting safety of aircraft operators engaged in parachuting is minimal, because the organisation considers they are not engaged in commercial activities. As will become apparent, this determination has far reaching safety ramifications. However, there is considerable doubt as to whether CASA has correctly interpreted the law and regulations in arriving at its position. While CASA acknowledges this is arguable, it contends I do not have jurisdiction to look into the issue.

In CASA's submission "*it is not an appropriate matter for a coroner to determine pursuant to the prescribed statutory function under the Coroners Act 2003".* I take this, together with the references to an inquest not being a Commission of Inquiry, and to there being no evidence of a causal link between the operator not being the holder of an AOC and the crash, to be a submission that a coroner can only comment on matters that can be shown to have contributed to the death in question. With respect, I do not accept that submission.

One of the objects of the Act is to help prevent deaths from happening in similar circumstances by allowing coroners to comment on matters connected with death, including matters related to public health and safety.[1] The section which makes this objects clause operational, s46(1), authorises a coroner to comment on anything connected with a death that relates to public health or safety.[2] The Supreme Court has held there is no justification for construing s46(1) "*as if containing a qualification that any comment be directed to the prevention of deaths from similar causes to that of the accident".*[3] The three subclauses of s46(1) are disjunctive.

All that is necessary is a connection between the comments and the death and that the comments relate to one of the three matters listed in s46(1). In the same case quoted earlier, Muir J observed; "*The expressions 'connected with' and 'relates to' are of wide import".*[4] He concurred with a submission by a party in those proceedings that there was no basis for reading "*connected with*" as meaning "*directly connected with"* and said; *"Section 46(1), being remedial in nature, should be construed liberally".*[5]

I am of the view the decision of CASA not to require commercial parachuting operators to hold an AOC is connected with the deaths investigated by this inquest. Accordingly, I am entitled to make comments that relate to the public health and safety aspects of that decision. This naturally requires me to

[1] s3(d)(i)
[2] s46(1)(a)
[3] *Doomadgee & Anor v Deputy State Coroner Clements &Ors* [2005] QSC 357, p10
[4] *ib id ,* 11
[5] o*p cit*

consider whether the aviation safety regulator has correctly interpreted the legislation relevant to the extent to which it oversights the aviation activity being engaged in when the deaths occurred.

Contrary to CASA's submission, counsel assisting did not suggest that had the Brisbane Skydiving Centre applied for and been granted an AOC, the accident would not have happened. Nor would I need to come to that conclusion before having jurisdiction to comment on the issue here under consideration.

CASA also submitted that I should not express a view on the interpretation of the relevant legislation and regulations because if I were to conclude that CASA had misconstrued them that would amount to a finding that the operator was acting unlawfully by engaging in a commercial activity not having applied for an AOC. Such a comment would, it is submitted, be contrary to s46(3), which prohibits a coroner's comments including "*any statement that a person is or may be guilty of an offence".*

The South Australian Supreme Court, when interpreting the Coroners Act of that State which prohibits even a "*suggestion"* of criminal liability being included in a coroner's findings, held the section was not breached by findings that a named person being investigated by the NCA had sent a letter bomb to the authority's Adelaide offices which, as intended, exploded, killing an officer.[6]

In explaining the decision, Nyland J said; "*criminal or civil liability can only be determined through the application of the relevant law to the facts, and it is only the legal conclusions as to liability flowing from this process which are prohibited by s26(3)".*[7]

I do not intend to draw the legal conclusions that CASA is concerned about. Accordingly, I do not consider s46(3) prohibits me from commenting on the proper interpretation of the legislation stipulating which operators must apply for an AOC.

The legislative regime

The *CAA* by s27 prohibits an aircraft being operated for a prescribed purpose except as authorised by an AOC issued by CASA.

Operations that are caught by this requirement are, in theory at least, subject to intensive oversight by the safety regulator. CASA can only issue an AOC if it is satisfied the organisation is suitable to carry out the proposed activity safely. This requires evidence that a spectrum of organisational and safety matters are being appropriately managed by the operator. These include ensuring that "*key personnel*", including the chief executive officer, the chief pilot and any head of training and checking, have "*appropriate experience*". CASA can require an applicant for an AOC to conduct proving flights or

[6] *Perre v Chivell* [2000] SASC 279
[7] *ib id* 14

demonstrate specific procedures to enable CASA to assess whether the applicant can safely conduct the proposed operation.

Had the operations of the Brisbane Skydiving Centre been brought under this regulatory umbrella, Mr Scoffell would have had to engage a commercial pilot as a chief pilot to oversee the flying operations of the business. CASA would have been in a position to assess what level of pilot checking and training was required for the purposes of safely operating the skydiving business. The organisation and its maintenance provider would have been subject to random audits by CASA flying operations and maintenance experts.

CASA's submission points out that requiring the operator of the skydiving centre to apply for an AOC would not necessarily have meant that all of these operational and personnel risk management steps would have been mandated by CASA. This is correct, but the authority would have been obliged to consider them and to be satisfied that appropriate systems were in place before granting an AOC.

However, because skydiving is considered by CASA to be a private operation, it does not require such operators to have an AOC, and its surveillance of aviation organisations undertaking it is limited to random ramp checks to confirm the serviceability of the aircraft. The ATSB could find no record that even this minimal oversight had been exercised in relation to the Brisbane Skydiving Centre.

The application of the existing regime to tandem parachuting

Self evidently, the requirement for an aviation operation to have an AOC has crucial safety ramifications. It is determined by whether the activities engaged in by the air operator come within any of the "*commercial purposes*" set out in CAR206 which delineates the prescribed purposes referred to in s27 of the CAA. That regulation specifies three general categories of aviation activity that it lists and defines by description and example. The three broad categories are aerial work, charter purposes and regular public transport.

In so far as is relevant to this case, "*charter purposes*" include "*the carriage of passengers or cargo for hire or reward to or from any place".* The ATSB report notes in 1999 the CASA board considered the ambit of CAR206 and apparently determined that "*the aircraft operation aspect of commercial parachuting should be excluded from the AOC requirement in CAR206*". However no change was made to the legislation or to the CAR as a result of this determination. Rather it seems that this was a policy or an administrative understanding that has henceforth applied.

As the evidence in this inquest clearly establishes, CASA does not view the conduct of flights for the purpose of transporting parachutists as constituting a prescribed purpose under s27, and therefore does not require such operations to be conducted by the holder of an AOC. In the evidence of its officers to the inquest and its submissions, CASA contends that all of the people in the incident aircraft were "*participants*" in a recreational aviation activity.

Counsel assisting helpfully sets out in his submissions some relevant authorities. The South Australian Supreme Court in *Chegwidden v White,*[8] interpreted legislation which preceded the CAA but contained the same definition of charter operations as quoted above. The court held that an aircraft operator who provides a customer with a number of different services in return for a single overall charge, carries those passengers "*for hire or reward*" if one of those services is carriage as a passenger in an aircraft. The court emphasised it is the substance of the arrangement, not the form of it that is decisive: "*the way the parties choose to dress up the arrangement, even with the best of motives, cannot be conclusive".*[9]

Cox J observed; "*If there is any ambiguity about it, the court should bear in mind that the evident purpose of the regulation in this respect is to promote air safety – higher qualifications are needed for a commercial pilot licence* (as are now for an AOC*) – and should give the regulations a liberal and remedial construction.*"[10]

The evidence in this case shows that customers of the Brisbane Skydiving Centre were charged a single fee for a tandem parachute jump. The fee included temporary membership of the APF, the provision of parachuting equipment, a pre-flight briefing from a parachuting instructor, the services of a tandem master and carriage in an aircraft to reach the jump height.

I have no doubt that part of the fee paid by tandem jumpers is for the air carriage to the jump height - this is why they are charged more if they jump from higher. Accordingly I am of the view a court could conclude tandem jumpers are passengers carried for reward and CASA has misinterpreted the legislation when determining such activities can be carried on without an AOC.

While the reasons for CASA's policy approach cannot override the law, they are relevant to the consideration of which should be changed: the policy or the law. I will therefore examine CASA's explanation of its policy position.

A CASA officer, Robert Glen, gave evidence that he is responsible for oversighting self administered aviation recreational activities such as hang-gliding, parachuting and ultra light aircraft. He said "*it remains the policy of CASA to classify parachute operations as private and regulate them in accordance with CASA's policy regarding industry sector priorities and classification of civil aviation activities".* Under that policy CASA distinguishes and prioritises the deployment of its resources in descending order with regard to the protection of "*passengers, task specialists, and thirdly participants"* respectively. According to Mr Glen "*parachutists fall within the category of participants as occupants of aircraft who voluntarily engage in an aviation activity, who are informed of the risks and have explicitly accepted the risks of their involvement in that activity*". He suggested this was appropriate

[8] (1985) 38 S.A.S.R. 440
[9] *Ibid* p449
[10] *Ibid* pp444- 445

because they are "*members of an organisation*" which has the capacity to inform its members of the risks of their sport and to manage those risks.

CASA provides limited funding to organisations involved in self administered recreation activities, in this case the APF, to discharge a number of responsibilities in relation to the oversighting of the activities concerned. However, Mr Glen indicated CASA "*never understood these obligations to extend to the examination by the APF of the manner in which an aircraft engaged in a parachute operation has been maintained or operated".* As indicated below, Mr Glen's appreciation of the limited nature of the APF's oversight of operators is accurate.

I am of the view this policy is seriously flawed. It is based on a false assumption that the passengers in the incident aircraft were in a position to inform themselves of the risk in participating in the activities advertised and offered by the Brisbane Skydiving Centre. The people who responded to the advertisements offering tandem parachute jumps were not in any position to assess whether the Brisbane Skydiving Centre operated in accordance with safety requirements that would apply to a commercial organisation or something significantly less; they had no interest in or regard to whether part of the fee they paid was used to sign them up as temporary members of the APF, and in any event, the APF did not exercise any oversight role in relation to the aviation aspects of the business.

I have no doubt members of the public would assume that a business advertising tandem sky diving freely available to the public without any significant training or testing was subject to the same regulations as a business offering, say, joy flights.

While members of the public wishing to engage in tandem parachuting can be expected to make their own assessment of the risk of jumping out of a plane while harnessed to a tandem master, they cannot in my view be expected to assess the suitability of the plane, the modifications that may have been made to it, the competency of the pilot or any other aviation issue to any greater extent than can a passenger chartering a light plane to fly him or her to a destination. I can see no valid basis on which CASA can suggest that a distinction between "*passengers*" and "*participants*" in these circumstances provides a reasonable basis for absolving itself from any responsibility for oversighting such operations.

Further, as CASA does not consider that the APF has any role in examining the manner in which the aircraft engaged in parachuting was maintained or operated, nor of ensuring that those who take up publicly advertised services are informed of the risks, I am unable to comprehend the basis on which it concludes it need play no role in oversighting these aspects of publicly advertised and offered tandem parachuting, involving as it does carriage for reward.

In its submissions, CASA explains the need to apply a descending order of priority to its oversight of "*passengers*", "*task specialists*" and *"participants*" as

a result of it having limited resources and the Government's requirement that it focus primarily on passenger safety. This is understandable. It is however inconsistent with its submission to the effect that the classification of the parachuting as a "*private operation*" and the fare paying passengers as "*participants*" does not expose those passengers to greater risk.

The APF

The APF sets operational standards for its members and issues parachutists' licences. Periodic audits of APF members parachuting operations are carried out by volunteer APF area safety officers. CASA has authority to undertake audits of parachute operations but delegates this role to the APF in accordance with a deed of agreement under which the APF is paid approximately $100,000 to discharge these functions throughout Australia.

The Queensland area safety officer, Michael Dyer, gave evidence at the inquest and explained audits are conducted on an annual basis and focus on compliance with parachuting regulations. The auditors have no particular qualifications but are highly experienced parachute instructors. The audits gauge compliance with the *Jump pilot's handbook and aircraft operation procedures manual.* The area safety officers use a standard form checklist. The APF understandably concentrates on safety aspects of the conducting of parachute descents, in particular parachuting equipment and training material offered by parachute training schools.

Such an audit had been conducted on the Brisbane Skydiving Centre some six months before the crash. It identified some discrepancies with paperwork but made no significant recommendations for changes. It did not identify any operational safety issues as needing remedial action.

CASA and the APF acknowledge the APF is in no position to address safety issues concerning the modification or maintenance of aircraft used in parachuting, any aspects of flying operations or the training or competency of the pilots.

Brisbane Skydiving Centre

While tandem jump passengers sign a waiver indicating they undertake the activity "*entirely at his/her own risk*", there is no suggestion they are informed of the standards, or lack of them, connected with the operation of the aircraft. For example, they are given no indication that the aircraft is being operated by an organisation that does not have the safety systems required of a fare paying passenger flight or a charter flight.

CASA somewhat disingenuously submits that, as the liability waiver forms were not in evidence, we do not know whether the fee paying tandem jumpers were advised of the added risks of being carried by operators that were not required to meet commercial standards. In fact, as the evidence of Ms Best makes clear, they were simply told that if they were injured they could not sue the operators. Only a lawyer could think such an arrangement amounted to informed consent or was part of a safety management system.

There were a number of anomalies with the way the incident flight was conducted: the plane was overloaded; no weight and balance form was completed; no floor harnesses restraints were used; no helmets were worn; and one pair of jumpers was harnessed together before or soon after the aircraft took off.

There was also evidence of previous problems with the incident aircraft and inadequate responses by the operators. The ATSB established that in May 2004, two tandem masters and their customers had to hurriedly exit the plane early when at an altitude of only six or seven thousand feet, due to the engine suffering a partial loss of power.

The ATSB could find no record in the aircraft's maintenance documentation relating to the incident. Nor was it reported to the ATSB as required by s19 of the *Transport Safety Investigation Act 2003*.

In June 2005, the incident aircraft sustained an in-flight engine failure and the pilot broadcast a MAYDAY to Air Services Australia seeking permission to make a forced landing at the RAAF base at Amberley. That did not become necessary as the engine power was restored. It seems that a fuel tank mis-selection was responsible. That incident was not reported to the ATSB either.

It was primarily the pilots' responsibility to make these reports. The operator was also obliged to report them. When the pilot was so keen to fly that he did so for free in order to build his hours, it is easy to understand why the reports which may have precipitated CASA scrutiny of the operation were not made.

I am of the view the Brisbane Skydiving Centre did not adequately manage some of the risks involved in the flying operations and the parachuting operations, and indeed was ill-equipped to do so.

Developments in other jurisdictions

In the United States the National Transport Safety Board (NTSB) has recently reported on safety issues arising from its investigation of a crash of a single engine aircraft being used to transport tandem jumpers. The plane crashed into trees soon after taking off. The pilot and five parachutists were killed.

This caused the NTSB to review a large number of similar incidents. It found that since 1980, 172 people have been killed in parachuting aircraft in crashes not associated with parachutist controlled risks.

The investigation prompted the Board to make recommendations to the FAA to address safety deficiencies concerning, among other things, inadequate aircraft maintenance and inspection, and inadequate FAA oversight and direct surveillance.[11]

[11] The media release of the report is at http://ntsb.gov/Pressrel/2008/080916.html

The issue has also been given some consideration in the United Kingdom following a crash of a Cessna 206 resulting in the death of the pilot and three parachutists.

The investigation of that incident by the Air Accidents Investigation Branch (AAIB) determined, among other things:

- The payment by parachutists for jumps lead to a perception of a commercial operation without it being the subject to the same standards as such an operation.
- Novice jumpers paid for jumps without being aware that the pilots and aircraft involved were not operating to a normal commercial standard.
- Despite parachuting operations placing considerable strain on aircraft, with frequent take offs, landings and climbs at maximum power, the standards that apply to commercial operations as a result of being imbedded in the AOC are not applied to parachuting operations.

Consequently the AAIB recommended the Civil Aviation Authority review its oversight of parachute schools to ensure aircraft maintenance and operational issues impacting pilots and aircraft meet the highest standards.

CASA's proposals for the future

Contrary to the overseas developments foreshadowed above, CASA's notice of proposed rule concerning part 149 of the CAR provides "*CASA's regulatory oversight of most sport and recreational flying will be minimal, relying on RAAO's* (Recreational Aviation Administration Organisations) *to administer the rules for persons who build and/or fly their aircraft*".

The approach is based on the classification of aviation enthusiasts as "*participants"* and not "*passengers".* I have already expressed the view that this is a mistake in so far as it relates to tandem parachutists availing themselves of publicly advertised fee-for-service jumps. I am of the view that while active members of aviation clubs may be in a position to assess the risks of such activities for themselves, the artifice of temporary membership of such organisations being built into fares should not allow members of the public to unwittingly be exposed to those risks.

It seems these proposed changes have been under consideration for many years and are contingent on the relevant RAAOs (in this case the APF) retaining appropriately qualified personnel and developing safety management systems sufficient to address the risks of the relevant activities. It seems the APF is negotiating with CASA in the hope of obtaining further funding to enable it to employ a person who could then advise the area safety officers around the country in relation to aircraft operational issues. It seems unlikely that these proposals will come to fruition in the near future.

I am pleased to note CASA has engaged external consultants to review safety within parachuting operations. It is to be hoped the review distinguishes

between the very different levels of assumed and accepted risk in sport parachuting and publicly offered fee-for-service jumping.

Conclusions

A court could conclude the occupants of the incident aircraft, other than the pilot and the tandem masters, were passengers who were to be carried for reward from the airstrip to the jump site. Accordingly, I consider CASA misapplied the provisions of the CAA s27 and CAR206 when it concluded that the Brisbane Skydiving Centre and other similar operators could offer tandem jumps to members of the public without holding an AOC.

I consider the oversight of tandem jumping operations by the APF was and remains insufficient to overcome the safety risks posed by the unsafe practices of operators such as the one involved in this case.

Those risks included:-

- A weight and balance form was not completed before the flight and the operator indicated this was normal.

- The aircraft was carrying 113kg in excess of its maximum take off weight (MTOW). The operator was mistaken as to what the MTOW was and so it is likely this was not an isolated occurrence.

- None of the occupants other than the pilot were secured by any harnesses. This was contrary to the Jump pilot's handbook which stipulated the use of floor restraints for all passengers.

- None of the occupants were wearing helmets. This is contrary to the APF's policy.

- One of the tandem masters was harnessed to his passenger in accordance with his U.S. training of that tandem master but contrary to the APF's policies. The operator claimed to be unaware that this tandem master adopted this practice.

- On at least two occasions the same aircraft malfunctioned and neither incident was reported to the ATSB, as required by legislation.

- The fuel used in the aircraft was stored inappropriately, leading it to degrade in a manner that could compromise its serviceability.

I don't accept CASA's submission that members of the general public such as Ms Best, Mrs McLelland, and Mrs Williams can be expected to make an informed decision and knowingly accept the risks of flying with such an operator. I don't accept that the general public is in a position to assess the risk of such non conforming practice; nor do I accept CASA's submission that

requiring such operators to apply for an AOC would not reduce the likelihood of such deviance going undetected.

Even without requiring them to obtain an AOC, CASA could audit skydiving operations offering services to untrained members of the public and continue to allow genuine parachuting clubs to be regulated through the APF. It chooses not to on the basis of flawed logic and a doubtful interpretation of the law, in my view.

CASA has submitted the danger of allowing members of the public to inadvertently ride with an unsupervised, private aircraft operator could be reduced by the APF requiring its members to bring this to the attention of their customers. I am inclined to the view that to be effective, this would need to be done in the operators advertising material, not at the point of sale after the customers have driven significant distances to the jump centre. The “happy snaps” of tandem jumpers smiling down from bill boards would need to be balanced by photographs of what eventuates when things go wrong: an option that I anticipate neither the industry nor the public would welcome.

I readily accept that CASA believes its policy is consistent with the law and is an appropriate way to delegate the oversight of sports aviation to interested bodies. However, as a result of considering the evidence gathered during this case, I have concluded CASA’s continued withholding of its flight operations, maintenance and safety experts from the surveillance, audit and oversight of publicly offered activities is contrary to the interests of public safety.

Recommendation 2 – Reconsider self regulation

I recommend that CASA reconsider its interpretation of s27 of the Civil Aviation Act and Civil Aviation Regulation 206 and revise its policy of devolving the surveillance of all aspects of publicly offered tandem parachuting to the AFP.

Other safety actions

There was conflicting evidence as to whether the use of single point cabin floor restraints as mandated by the APF was wise. Some of the witnesses suggested these restraints were unlikely to provide significant protection to the aircraft’s occupants in the event of a crash, and could hinder occupants from escaping a plane after a crash. I note the review by the NTSB referred to earlier, considered the use of dual point restraints which presumably addresses the first of these concerns. In any event, it is appropriate that the anomalous situation whereby the APF recommends the use of restraints, which the industry apparently does not support or comply with, be addressed.

Similarly, there was a divergence of opinion between the APF and the skydivers who gave evidence in relation to the appropriateness of the wearing of helmets. I am not in a position to resolve these differences, but that should be done and the results implemented.

Recommendation 3 - APF to review utility of floor restraints and helmets

In view of the evidence that the use of single point cabin floor restraints as mandated by the APF is not supported by the industry, the APF should review the issue and publish its findings.

Likewise, it should review the evidence relevant to the safety impact of tandem skydivers wearing helmets and require its members to implement the findings of that research.

Advances in EFATO training

I mentioned earlier the difficulties of providing practical training to pilots to best equip them to respond to a partial EFATO. Apparently, in 2006 and 2008 amendments were made to the *CASA Day (VFR) syllabus – aeroplanes* that have resulted in partial EFATO training being included in student training. This raises the question of such training for pilots licensed before that time.

Recommendation 4 - Updating of EFATO response skills

I recommend CASA consider requiring pilots who have not received current training in responding to an EFATO to undertake such training before their licences are next renewed.

I close this inquest

Michael Barnes
State Coroner
Brisbane
24 November 2008