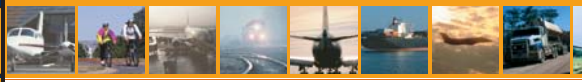
Australian Government
Australian Transport Safety Bureau

The Australian



Executive Director's Message

The ATSB's international engagement with Indonesia

Most readers will know that on 7 March last year, a Garuda Boeing 737 overran the runway at Yogyakarta Airport at high speed and the impact and subsequent fire claimed 21 lives including five Australians.

Within hours of the accident the Indonesian Government requested ATSB assistance. Three senior aviation safety investigators, led by an ATSB Deputy Director, departed that evening to join Indonesian investigators to work collaboratively on unravelling the events that contributed to the accident. We also worked on the FDR and CVR in Canberra.

The tragedy of the Yogyakarta accident set in train a package of measures to assist Indonesia improve transport safety. In the May 2007 Budget, the former Government announced funding of up to $24 million over several years, for various Australian agencies to provide assistance to our Indonesian counterparts. The ATSB is playing a key role in this program, and building on a long history of engagement with Indonesia's investigation agency, the National Transportation Safety Committee (NTSC).

So far the ATSB has worked closely with the NTSC on both the Garuda and AdamAir investigations – supporting the development of the NTSC's accident reports, and giving technical assistance through the download and analysis of flight data and cockpit voice recorders. The Bureau has also commenced a series of long term placements for Indonesian investigators to spend up to 12 months completing specialist training and working with ATSB investigators. That program will be extended to also provide training in recorder analysis to support the NTSC's aim of establishing its own recorder laboratory.

In December 2007 the ATSB hosted the first of a series of human factors training courses in Jakarta. Human factors are an integral part of modern transport safety investigations, and the ATSB has established a world-class reputation in this field. Around 60 participants attended the inaugural course in Jakarta, including NTSC investigators, staff from Indonesia's civil aviation regulator, and other professionals involved in marine, road and rail transport. Future activities will include a new course covering human factors in the maintenance engineering environment and in basic investigation techniques.

The Indonesian assistance package will help the ATSB foster an even closer relationship with our colleagues in the NTSC, and over time, will deliver real safety benefits for our neighbour and travellers in the region.

Kym Bills, Executive Director

CFIT: Australia in context 1996 to 2005

Controlled flight into terrain (CFIT) has been identified as one of 'aviation's historic killers', claiming the lives of more than 35,000 people since the emergence of civil aviation in the 1920s. Given the catastrophic nature of CFIT, the international aviation community has invested a considerable amount of time and resources to prevent CFIT, particularly in the commercial sector of the industry. Most notable are the efforts made by the Flight Safety Foundation through CFIT awareness and education, and the introduction of terrain awareness technologies such as the Ground Proximity Warning System and Terrain Awareness and Warning System. Even though these measures have, directly or indirectly, contributed to a reduction in the number of CFIT accidents involving commercial jet aircraft since 1998, CFIT accidents remain a challenge.

An ATSB report published in late 2007 provided an overview of CFIT from an international perspective, explored the initiatives introduced in an effort to reduce CFIT, and examined CFIT in the Australian context.

A search of the Australian Transport Safety Bureau's (ATSB) aviation safety database identified 25 CFIT accidents and two CFIT incidents in the period 1996 to 2005. Of the 25 CFIT accidents, 15 were fatal accidents resulting in 47 fatalities. General aviation accounted for the greatest proportion of CFIT accidents, fatal accidents and fatalities. Only one CFIT occurrence over the reporting period involved regular public transport operations (VH-TFU, Lockhart River, Queensland, 7 May 2005), but this accident accounted for nearly one-third of all CFIT fatalities. This highlights the seriousness of CFIT accidents and the reason they remain high on the agenda of aviation safety organisations worldwide.

In line with international experience, nearly two-thirds of CFIT accidents and incidents in Australia occurred in the approach phase of flight, with half of these during an instrument approach. Of the CFIT instrument approach occurrences, 67 per cent involved a satellite-based instrument approach. The prevalence of satellite-based approaches may reflect the growing popularity of these types of approaches and a shift away from the traditional terrestrial-based navigation aids. The data suggest that there is scope to reduce CFIT further by implementing approaches with vertical guidance (APV), which provide vertical guidance on approaches much like precision approaches. This capability can assist pilots with maintaining vertical and lateral situational awareness and hence, reduce the risk of CFIT. Australian aviation authorities are currently investigating options to provide APV.

Overall, when compared with the total number of accidents recorded in the ATSB's database for the 10-year period, CFIT in Australia is a rare event. However, should a CFIT occur, there is a high risk that it will result in fatal injuries to the aircraft occupants. A continued focus on developing preventative strategies is therefore warranted in an effort to reduce the risk of CFIT further. ■

Final ATSB investigation report on Condobolin in-flight breakup 4-fatality accident

The ATSB's final investigation report into a Piper Chieftain accident near Condobolin, NSW on 2 December 2005, resulting in four deceased persons, confirms that the aircraft broke up during flight when its structural limits were exceeded in the vicinity of thunderstorms.

The Australian Transport Safety Bureau report states that there was no indication, either by way of emergency radio transmission from the pilot, or in a change in the altitude, track and speed of the aircraft as recorded by radar, that the flight was not proceeding normally. Some minutes after the pilot reported diverting left of track to avoid weather, communications with the aircraft were lost.

The absence of an on-board recording device on the aircraft prevented a full analysis of the circumstances of the breakup. However, while post-impact fire damage limited the extent to which some of the aircraft's system's, including the fuel and electrical systems, could be examined, wreckage examination did not reveal any pre-existing fault or condition that could have weakened the aircraft structure and caused it to break up at a load within the design load limit.

A line of severe thunderstorms crossed the aircraft's planned track and were the subject of a SIGMET (significant weather advice) issued by the Bureau of Meteorology. As the SIGMET information did not meet the criteria for direct notification, it was not advised directly to the pilot of the aircraft. The investigation was unable to determine if the pilot had obtained the SIGMET from any of the range of pre and in-flight weather briefing services available to the pilot.

Analysis of the prevailing weather indicated that, immediately before the accident, the aircraft was likely to have been surrounded to the east, west, and south by a large complex of thunderstorms. That situation may have limited the options available to the pilot to avoid any possible hazardous phenomena associated with the storms.

Although, as a result of a review of Flight Information Service initiated in November 2004, Airservices Australia had identified inconsistencies and ambiguities in the provision of Flight Information Service, including Hazard Alert procedures, they were not assessed by the investigation to be contributing factors to the accident. As a result of its review, Airservices Australia initiated changes to the Flight Information Service and Hazard Alerts sections of the *Manual of Air Traffic Services* and the *Aeronautical Information Publication* to improve future safety.

While not contributory to the accident, the report identifies a number of inconsistencies between Australian SIGMET dissemination procedures and those contained in International Civil Aviation Organization (ICAO) documentation. The report contains recommendations to Airservices Australia and the Civil Aviation Safety Authority to review Australian procedures with a view to minimising those inconsistencies.

The circumstances of the accident are a salient reminder to pilots of their responsibilities to request weather and other information necessary to make safe and timely operational decisions, and of the importance of avoiding thunderstorms by large margins.

Resulting from this investigation, the ATSB made the following recommendations to CASA and Airservices Australia:

ATSB safety recommendation R20070025

The Australian Transport Safety Bureau recommends that the Civil Aviation Safety Authority, in consultation with Airservices Australia, review the requirements for the dissemination of SIGMET information with a view to minimising differences between air traffic control procedures contained in the Aeronautical Information Publication and those contained in ICAO Doc.4444 and ICAO Doc.7030.

ATSB safety recommendation R20070026

The Australian Transport Safety Bureau recommends that Airservices Australia, in consultation with the Civil Aviation Safety Authority, review the requirements for the dissemination of SIGMET information with a view to minimising differences between air traffic control procedures contained in the Aeronautical Information Publication and those contained in ICAO Doc.4444 and ICAO Doc.7030. ■

Investigation briefs

Loss of control

Occurrence 200600851

At about 1922 EDST on 16 February 2006, the pilot of a turbine PZL-Warszawa-Ockie M-18A, Dromader, registered VH-FVF, was fatally injured when the aircraft impacted terrain during fire-bombing operations approximately 20 km south-south-west of Cootamundra, NSW.

The aircraft was one of two fixed-wing fire-bombing aircraft that were despatched from Wagga Wagga to drop retardant on an active fire area east of Mount Ulandra. At about 1921, volunteer firemen working to the west of the fire area saw the Dromader and although they could not recall the sound of the aircraft, they reported that there was no unusual noise or change to the noise level to attract their attention. The pilot was an experienced agricultural pilot with previous fire-bombing experience. Although he had considerable flying experience on radial-engine Dromader aircraft, and in other turbine agricultural aircraft, his total flying experience in the modified turbine Dromader was 4.7 hours. Prior to commencing fire-bombing duties two days before the accident, the pilot had not recorded any fire-bombing flights in the previous 3 years. The pilot's limited familiarity with the handling characteristics of the modified and heavily-loaded aircraft might not have allowed him adequate recognition of an impending stall. The pilot had not jettisoned the load of retardant when the aircraft stalled. The ensuing loss of control occurred at a height that did not permit recovery before the aircraft collided with the ground. The possibility that the pilot was distracted by a problem with the operation of the fire doors or some other activity could not be determined.

Subsequently, the state fire authority reviewed its minimum pilot experience levels for aerial fire suppression. The minimum aircraft type experience for fire-bombing pilots was made more specific to the type of aircraft. It also introduced a recency requirement for fire-bombing operations. ■

Loss of control

Occurrence 200605133

On 1 September 2006, at approximately 1100 WST, the pilot of a Cessna C172L aircraft, registered VH-RIL, was conducting a private, visual flight rules (VFR) flight, and together with four passengers (two adults, one child and an infant), departed from Bronco, a cattle mustering area on Mt Vernon station, WA. The pilot was to fly to the homestead on the property, a flight of approximately 10 minutes duration.

At the same time, members of the pilots family and station staff left Bronco in motor vehicles to drive the approximately 30 km journey back to the homestead. Upon their arrival, it was noted that the aircraft had failed to arrive at the homestead. After attempts to contact the pilot by radio failed, a search was conducted, during which the pilot and child passenger were found walking towards the homestead. The pilot, who was disorientated and injured, reported that the aircraft had crashed in bushland adjacent to the homestead airstrip. The child had minor injuries.

After obtaining general directions to the aircraft, the search party were able to locate the aircraft wreckage. On arrival, searchers found a female adult passenger semi-conscious with extensive injuries. The male adult passenger and the infant had been fatally injured.

The pilot and female passenger reported that the aircraft had entered severe turbulence during the descent to land, which resulted in a near-vertical nose down attitude of the aircraft approximately 300 to 350 feet above the terrain.

The investigation determined that the pilot had most likely flown through a strong willy-willy and was unable to recover from the in-flight upset. The investigation also found that it was likely that inadequate restraint of some occupants increased the severity of injuries sustained. ■

Reporting trends in airline operations

The reporting of aviation safety occurrences enables the ATSB to investigate accidents and incidents, and monitor safety. On 1 July 2003, reporting obligations changed with the introduction of the *Transport Safety Investigation Act 2003* (TSI Act). For the first time, the types of occurrences that need to be reported to the ATSB were prescribed. These occurrence types are defined as either immediately reportable or routine reportable matters (IRMs and RRMs, respectively). A research report released by the ATSB in December examined trends in IRMs involving regular public transport (RPT) operations.

The study examined the period from mid 2001 – before the introduction of the TSI Act – to mid 2006. The results indicate that despite an increase in RPT activity, the number of IRM occurrences remained stable or declined. When measured in relation to airline activity, the trend rate was generally downwards.

Violations of controlled airspace reduced over the period while occurrences involving a fire, explosion or fumes and crew injuries or incapacitation also decreased, but only marginally. Other IRM categories such as contained engine failures and fuel exhaustion were rare, or absent. The exception was breakdowns of separation (BOS) and airprox events, where occurrence numbers went up. However, when measured in terms of rate, BOS and airprox events were relatively stable, suggesting that the increase was largely linked to increased activity. Accidents were extremely rare. Only one accident involved fatalities, with the loss of all 15 people on board a regional airliner near Lockhart River. All other accidents were limited to damage to the aircraft, or injury to crew or passengers.

This study highlighted the value of a strong reporting culture and provided encouraging data concerning safety trends in Australian airline operations. ■

Engine failure

Occurrence 200604514

On 8 August 2006 at 1115 EST, a Cessna Aircraft Company model 182P aircraft, registered VH-WNR, departed Archerfield Aerodrome, Qld, on a private flight to Goondiwindi, Qld. The pilot was the only person on board. A few minutes after takeoff, an internal mechanical failure caused a substantial loss of engine power. At 1121, the pilot transmitted a distress message to air traffic control that he was attempting an emergency landing and that the aircraft engine had failed. At that time, the aircraft was approximately 5 km west of Archerfield Aerodrome at about 1,000 ft above ground level. He attempted to position the aircraft for a landing in the only area he could see that appeared suitable for an emergency landing. Ground witnesses saw a thick stream of white smoke emanating from the right side of the engine.

The aircraft subsequently collided with powerlines before impacting the roof of a house. It traversed the roof and came to rest inverted a short distance from the rear of the house. A fire began when leaking fuel ignited. The pilot received serious burns to his upper body. The aircraft was destroyed by impact forces and fire. The house sustained major structural damage to its roof and two of the three occupants received minor injuries.

Subsequent engine disassembly and examination revealed catastrophic damage to the engine related to the failure of the number-5 cylinder connecting rod assembly. Reduced connecting rod pre-load, due either to insufficient assembly torque, or excessive torque producing permanent bolt stretch, was considered the most likely reason for the failure of the connecting rod assembly. However, because of the consequential damage caused by continued engine operation, there was inadequate evidence to directly support either failure mode. ■

Collision with terrain

Occurrence 200600979

On 21 February 2006, a Robinson Helicopter Company R44 Astro helicopter, registered VH-HBS, was being operated on a series of aerial survey flights approximately 100 km to the north of Mt Isa Airport, Qld. The helicopter was operating from Gunpowder airstrip and had completed three flights by 1254 EST. The pilot refuelled the helicopter and at 1341 departed for a survey flight with three passengers on board. When the helicopter did not arrive at a pre-arranged rendezvous point, a search was initiated. Searchers found the burnt wreckage of the helicopter the next day. The four occupants were fatally injured.

The helicopter had impacted the ground with significant force in a nose-down, fuselage-level attitude. The main rotor displayed evidence of low rotational energy and coning. Other than impact and fire damage, there were no identified mechanical defects or abnormalities. There was evidence that the engine was rotating at impact, but the amount of engine power being developed was not able to be established.

The previous aerial survey flights were reported to have included low speed flight and occasional hovering. At the estimated helicopter weight and the prevailing air density, the helicopter did not have the performance to hover at the survey altitude, which was estimated to be about 1,000 ft above ground level. The investigation considered that the helicopter probably descended contrary to the pilot's intentions, possibly influenced by a partial engine power loss or downdraft, and induced the pilot to apply collective, which developed into overpitching and ultimately main rotor stall.

The investigation found that the helicopter was being operated at gross weights that exceeded the specified maximum take-off weight. The investigation also found that the operator's procedures did not provide a high level of assurance that a relatively low time pilot could conduct aerial survey operations safely. ■

Crew incapacitation

Occurrence 200704236

A Boeing Company 767-300 aircraft, registered VH-OGP, was being operated on an overnight international passenger flight from Nagoya, Japan to Cairns, Qld. On board the aircraft were a pilot in command (PIC), a copilot, seven cabin crew and 162 passengers. The copilot was the pilot flying for the sector and had just completed a period of crew rest. The PIC handed back the control of the aircraft to the copilot at about 1600 UTC and got up to go to the toilet. The copilot heard a bang and turned to see the PIC had collapsed on the cockpit floor. There was no response from the PIC to the copilot's questioning. The copilot switched on the cockpit lights and saw that the PIC appeared to be staring into space and remained unresponsive. The copilot then alerted the cabin service manager to come to the flight deck.

At approximately 1650 UTC, the PIC had recovered sufficiently to return to the cockpit, where he remained for the duration of the flight. A PAN call was transmitted when the aircraft entered the Australian Flight Information Region and emergency services were placed on standby for the aircraft's arrival and landing at Cairns.

The PIC was subsequently examined and cleared to return to flight duties by a Designated Aviation Medical Examiner (DAME). The DAME determined that the PIC probably had been affected by a gastro-intestinal illness that had previously been experienced by members of the PIC's family. A Norovirus gastro-intestinal disorder was prevalent in the Queensland region at the time. ■

Repcon.....briefs

Australia's voluntary confidential aviation reporting scheme

REPCON is a voluntary confidential reporting scheme for aviation. REPCON allows any person who has an aviation safety concern to report it to the ATSB confidentially while protecting the reporter's identity. REPCON can issue a For Your Information notice or an Alert Bulletin to the relevant organisations that can take action to address the safety concerns outlined in the de-identified report. This can also include providing the de-identified report to the investigator in charge (IIC) of a current ATSB investigation. From the commencement of the REPCON scheme, three REPCON reports have been provided to the ATSB to investigate or help with an ongoing investigation. One such report has been included in this article (R200700072).

REPCON is keen to hear from you if you have experienced a 'close call' and think that others may benefit from the lessons that you have learnt.

Back tracking

R200700096

Report narrative:

Concerns have been expressed about the safety of aircraft operated at Hoxton Park Aerodrome during road works on the airfield. Aircraft have been reported backtracking along the main runway.

REPCON comment:

The aerodrome operator informed REPCON that they believed the report concerned taxiway works that had been completed earlier in the month. Due to the nature of the works, back tracking was unavoidable. The works had been carried out following planning and consultation with tenants on the airport and stake holders. A consultation plan was developed in accordance with the then Department of Transport and Regional Services guidelines. Also, a Method of Works Plan was developed although not required by CASA. CASA reviewed the plan and it was distributed to all tenants. A NOTAM was issued notifying of the works. The aerodrome operator also allocated a works safety officer for the work site. ■

If you wish to obtain advice or further information on REPCON, please visit the ATSB website at www.atsb.gov.au or call REPCON on 1800 020 505.

Wing skin corrosion

R200700062

Report narrative:

Wing skin corrosion was discovered on two Learjet 45s operated by [operator]. The aircraft are about seven years old. CASA was informed through the Service Difficulty Report (SDR) system. The SDR report stated: 'During scheduled maintenance inspections of the wings, areas of apparent surface corrosion were noted on the external surfaces of the lower left and right wings. Further investigation and assessment of the affected areas indicated that the corrosion removal process would exceed the Structural Repair Manual limits. Advice was sought from Bombardier Learjet Engineering. Following extensive investigation and assessment by Bombardier, an FAA-approved repair drawing detailing corrosion removal and treatment, airworthiness limitations and supplemental maintenance inspections, was issued. The lower wing skins have been repaired in accordance with the approved data, and the aircraft returned to service'.

REPCON comment:

The airframe manufacturer informed REPCON that they were conducting their own investigation to determine if there was a fleet concern. The preliminary investigation indicates that this event is unique to those two aircraft, which are not utilized in the same way as the rest of the fleet. Prior to operating in Australia, the aircraft were operated by the same organisation overseas. To date, REPCON has not received the manufacturer's final investigation report.

CASA provided further information that the SDR system had only received the two reported cases of wing skin corrosion in this aircraft type; the two cases relate to the Learjet 45s referred to in this REPCON report. Both the aircraft involved had low airframe hours and were operated in an environment that was prone to corrosion. CASA issued AWB 57-4 issue 1 on 13 July 2007 to notify operators of Lear 45 aircraft to check for wing skin corrosion. CASA assessed the SDR as requiring no further action and the SDR was closed. ■

ETOPS operations

R200700072

Report narrative:

There have been multiple instances of the Airbus aircraft being certified as ETOPS capable while its APU was inoperative under the Minimum Equipment List (MEL).

The Airbus Defect Deferral Guide (DDG) which covers the MEL manual and Configuration Deviation List, does not mention the issue regarding ETOPS capability when the APU is inoperative. However, the company's ETOPS Manual explicitly states that an inoperative APU renders the aircraft non-ETPOS capable.

The reporter claims that the [operator] has repeatedly put forward the interpretation 'if it is not specified in the DDG, it is ETPOS capable' contrary to the company's ETOPS Manual. These and other instances of ETOPS Manual misinterpretation have been discussed between LAMEs and the operator's safety department staff.

REPCON comment:

On the reporter's request, REPCON provided the de-identified information to the IIC of a relevant ATSB aviation safety investigation (No. 200704612). The investigation is continuing. The safety investigation Preliminary report is available on the ATSB website. ■

REPCON reports received	
Total (29 Jan* to 31 Dec 2007)	117
Last quarter (1 Oct to 31 Dec 2007	28
What happens to my report?	
For Your Information notices issued	
Total (29 Jan* to 31 Dec 2007)	58
Last quarter (1 Oct to 31 Dec 2007)	15
Alert Bulletins issued	
Total (29 Jan to 31 Dec 2007)	1
Last quarter (1 Oct to 31 Dec 2007)	0
Who is reporting to REPCON?#	
Aircraft maintenance personnel	23.9%
Air Traffic controller	2.6%
Cabin crew	1.7%
Facilities maintenance personnel/ground crew	0%
Flight crew	23.9%
Passengers	6.0%
Others+	41.9%

* REPCON commenced on 29 January 2007.
\# 29 Jan to 31 Dec 2007.
\+ examples include residents, property owners, general public.