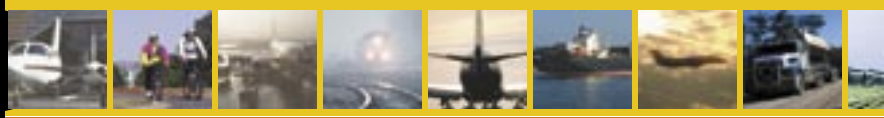
Australian Government
Australian Transport Safety Bureau

The Australian Air



Executive Director's Message

The latest meeting of the International Transportation Safety Association (ITSA) was held in Washington DC from 16 to 18 March 2005 and hosted by the Chairman of the US National Transportation Safety Board, the Hon Ellen Engelman-Connors. I find these approximately annual ITSA meetings of the Chairmen and CEOs of like bodies to the ATSB to be very useful because so many of the same issues arise for each of us. These include selecting and resourcing investigations under fixed budgets, timeliness of final reports, framing and monitoring of safety recommendations, and recruiting and training investigators.

As you will be aware the last big (over 20 fatalities) aviation accidents in Australia occurred in the 1960s and ITSA meetings also provide insight and high level personal connections that we hope won't be needed if there is a major accident in Australia. But if there was such a tragedy, I am sure that colleagues from countries like the US and Canada would be quick to lend a hand and augment the ATSB's investigation team.

I prepared and delivered papers which included the ATSB's ICAO Annex 13 audit experience, the potential role of memoranda of understanding, developments in other modes applying Annex 13 principles (including ATSB sponsored progress at ICAO and the final report of the NSW Waterfall Commission), confidential reporting and data, and investigator training.

The next meeting of ITSA will be in Canberra in March 2006 after I have taken over the ITSA Chairmanship from the Chairman of the NTSB on 1 March.

Kym Bills, Executive Director

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An Aviation Self Reporting Scheme (ASRS) form can be obtained from the ATSB website or by telephoning 1800 020 505.

Brake fires and evacuation

Occurrence 200302980

On 2 July 2003, the Boeing 747-438 aircraft, registered VH-OJU, on a scheduled flight from Singapore, arrived at Sydney at 0511 EST, during the airport's curfew period. There was a tailwind of around 12 knots when the aircraft landed. The pilot flying selected auto brake setting three and idle reverse thrust in accordance with the curfew requirement. During the landing roll the reverse thrust was inadvertently de-selected.

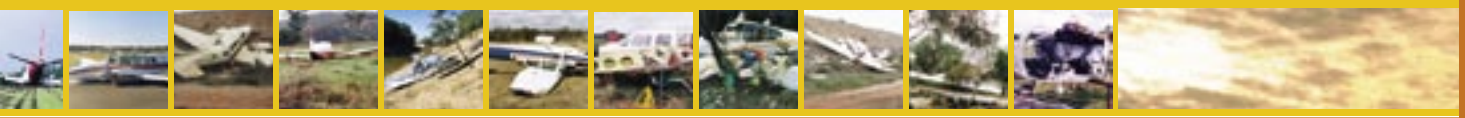
On arrival at the terminal, the pilot in command (PIC) observed a BRAKE TEMP advisory message and notified the ground engineers. At that point, a fire ignited on the right wing landing gear. The flight crew were advised and the PIC ordered an evacuation of the aircraft. On receiving the evacuation announcement, the cabin crew commenced the evacuation drill deploying the aircraft's escape slides. The upper deck left door and doors 2 left and 4 right escape slides, did not deploy. During the evacuation, the over-wing slide at door right 3 deflated while in use. As a result of the evacuation, one flight crew member and three passengers were seriously injured. Some passengers evacuated down the slides with their cabin baggage.

During the accident, an additional two brake fires ignited on the right body landing gear, one of which was extinguished by the Aerodrome Rescue and Fire Fighting Service (ARFFS). A subsequent inspection found that the aircraft's landing gear contained an excessive amount of grease with the presence of inappropriate grease on all of the landing gear axles. The three brake units that had caught fire were found to be serviceable but in a worn condition.

The investigation determined that slide door right 3 did not have any pre-existing defects that contributed to its failure. The nature of the failure was found to be overload of the fabric fibres during the evacuation. The inappropriate grease found on the landing gear axles was general purpose grease used on other components of the landing gear. The time and point of its application to the aircraft axles could not be determined.

The investigation found deficiencies in the operator's maintenance, flight crew and cabin crew procedures. As a result, the operator has issued maintenance memos to its engineering staff clarifying aircraft landing gear lubrication procedures, amended its Aircrew Emergency Procedures Manual, and reviewed cabin crew and flight crew emergency procedures.

As a result of this investigation, the ATSB is issuing safety recommendations to the operator and the Civil Aviation Safety Authority to review the use of over-wing slides during known brake fires. The reviews should take into consideration the visual cues used and potential risk to passengers of evacuating within close proximity of a fire zone. ■



Fatal accident after takeoff from Jandakot Airport, WA

ON 11 August 2003, at about 1535 WST, a Cessna 404 Titan (C404) aircraft, registered VH-ANV, took off from runway 24 right (24R) at Jandakot Airport, WA. One pilot and five passengers were on board the aircraft. The flight was being conducted in the aerial work category, under the instrument flight rules.

Shortly after the aircraft became airborne, while still over the runway, the pilot recognised symptoms that he associated with a failure of the right engine and elected to continue the takeoff. The pilot retracted the landing gear, selected the wing flaps to the up position and feathered the propeller of the right engine.

The pilot later reported that he was concerned about clearing a residential area and obstructions along the flight path ahead, including high-voltage powerlines crossing the aircraft's flight path 2,400 m beyond the runway. The aircraft was approximately 450 m beyond the upwind threshold of runway 24R when the pilot initiated a series of left turns. Analysis of radar records indicated that during the turns, the airspeed of the aircraft reduced significantly below the airspeed required for optimum single-engine performance.

The pilot transmitted to the aerodrome controller that he was returning for a landing and indicated an intention to land on runway 30. However, the airspeed decayed during the subsequent manoeuvring such that he was unable to safely complete the approach to that runway. The pilot was unable to maintain altitude and the aircraft descended into an area of scrub-type terrain, moderately populated with trees. During the impact sequence at about 1537, the outboard portion of the left wing collided with a tree trunk and was sheared off. A significant quantity of fuel was spilled from the wing's fuel tank and ignited. An intense post-impact fire broke out in the vicinity of the wreckage and destroyed the aircraft.

Four passengers and the pilot vacated the aircraft, but sustained serious burns in the process. One of those passengers died from those injuries 85 days after the accident. A fifth passenger did not survive the post-impact fire.

Analysis of radar data indicated that the aircraft was operating significantly below the optimum speed for maximum single-engine climb performance for most of the flight. A number of factors affect an aircraft's one-engine inoperative performance, including any variation from the airspeed to achieve the one-engine inoperative best rate of climb, control inputs made by the pilot to manage the situation and the effect of manoeuvring/turning the aircraft.

The failure of the right engine was due to fuel starvation when the drive shaft to the right engine-driven fuel pump had sheared. Examination of the right engine revealed a material anomaly with the fuel pump sleeve bearing. That bearing exhibited evidence of localised adhesive wear (galling) that had restricted the rotation of the pump spindle shaft. The bearing had previously been replaced during the last engine overhaul.

Analysis of the bearing revealed that it had been manufactured from material that possessed inferior galling resistance when compared with bearings from similar pumps. The investigation concluded that the specified material for the replacement sleeve bearing was inadequate with respect to its galling resistance. High torsional loads between the spindle shaft and the sleeve bearing had caused the pump's drive shaft to shear at a critical phase of flight. Associated with a loss of drive to the pump shaft was a reduction in fuel pressure, which was insufficient to sustain operation of the engine at take-off power.

Following the occurrence, the operator modified other C404 aircraft in its fleet to incorporate a warning light to indicate low fuel pressure. The ATSB has previously issued three recommendations (see ATSB report BO/200105618) relevant to pilot training for engine-out operations in multi-engine aircraft. Those recommendations are also relevant to the circumstances of this occurrence. ■

Safety briefs

Loss of power on joy flight

Occurrence 200403764

The pilot who was the company chief pilot, reported that he was conducting a 10 minute joy flight with three passengers on board the aircraft in the Gold Coast area. There was 45 L of fuel in the right wing tank and the left wing tank was empty. The flight proceeded normally and at the turning point the pilot flew a wide flat turn using rudder and opposite aileron to give the passengers the best view from the aircraft. After completing the turn, the engine lost power, so the pilot conducted a forced landing on the Nerang River.

The pilot said that after landing he checked the fuel and conducted a fuel drain. He then restarted the engine and noted that all instrument indications were normal. He said that, because there was no other company person available to assist the pilot with the logistics of looking after the aircraft and passengers, he elected to continue the flight. He reported that the takeoff was normal but that the engine lost power soon after the aircraft became airborne. At about the same time, he saw powerline markers directly ahead. He flew over the wires, and noted the aircraft speed had fallen to under 45 knots. The pilot lowered the nose and set the aircraft in the landing attitude. The engine surged but the aircraft impacted the water heavily, and was substantially damaged.

There was 37 L of fuel remaining in the left wing tank, with no evidence of any water. The fuel strainer contained a minor amount of brown residue, but all other filters and the fuel distributor were clean. ■

Lack of separation assurance

Occurrence 200402411

On 19 June 2004, at about 1908 UTC, two Australian registered Boeing 767-338ER aircraft were involved in a serious incident in the Ujung Pandang Flight Information Region (FIR) on air route B473, approximately 60 NM northwest of waypoint SAMGE.

Flight number QF 83 was northbound and flight number QF 98, was southbound on the same air route. The crew of QF 83 reported at SAMGE at 1901 UTC. The crew stated that Ujung Control cleared the crew to 'Descend flight level (FL) 350, cross SADAN at FL350 and report leaving FL360'. At about 1906, while maintaining FL360, the crew observed an aircraft (QF 98) on the reciprocal track. The crew of QF 98 were cruising at their cleared level of FL350. This aircraft passed 1,000 ft below QF 83 at about 1908. The crew of QF 98 asked Ujung Control to confirm their clearance. The controller then replied 'Maintain FL360, report at time 1917'. If the crew of QF 83 had descended their aircraft from FL360 to FL350 there would have been an infringement of separation standards and an increased risk of collision, with QF 98.

The ATSB was advised of the incident and commenced an investigation. The crews of both aircraft were interviewed and data from each aircraft's quick access recorder was analysed. A review of that data subsequently revealed that the incident occurred inside Indonesian territory. Accordingly, the Indonesian National Transportation Safety Committee (NTSC) had the responsibility to conduct an investigation. On 8 July 2004, the NTSC informed the ATSB that they had commenced an investigation into the incident and the ATSB appointed an accredited representative. The operator implemented a number of actions to be taken for flight by its aircraft in Ujung Pandang FIR. ■

Boeing 737 bogged at Melbourne

Occurrence 200403722

At 1940 EST, on 4 October 2004 a Boeing 737-300 was being taxied to runway 27 at Melbourne Airport for a scheduled international passenger service to Hamilton, New Zealand when its left main landing gear tyres penetrated the blast-protection surface adjacent to the shoulder of taxiway Papa.

A holding bay was located north of taxiway Echo, and the first lead-in light to the holding bay was about 40 m west of the first lead-in light to taxiway Papa. As the aircraft approached the holding bay lead-in lights, the copilot asked the aerodrome controller 'is it hard left Papa here?' From the controllers' vantage point, and in the night-time conditions, the aircraft would appear to have been at the lead-in to Papa, and the SMC confirmed to the crew that it was Papa.

The pilot in command then turned the aircraft left and began to enter the holding bay, thinking it was taxiway Papa. The crew realised that they were not on Papa, and turned the aircraft to the right to regain taxiway Echo and the lead-in to Papa. However, the pilot in command misidentified the double lines on the taxiway shoulder as being the taxiway centreline. Consequently, the aircraft was inadvertently steered onto the blast-protection surface adjacent to the taxiway shoulder, where it penetrated the blast-protection surface and became bogged. ■

Darwin runway excursion

Occurrence 200302890

The ATSB's final investigation report into the landing incident at Darwin Airport on 19 February 2003, found that the Boeing 737 deviated from the runway centreline moments prior to touchdown.

The 737 was operating a scheduled public transport passenger service between Adelaide and Darwin, with six crew and 79 passengers. The landing approach to Darwin was made at night and in conditions of reduced visibility due to rain.

The investigation found that the 737 started to drift from the runway centreline about 14 seconds prior to touchdown. Control inputs made by the pilot exacerbated the deviation from the runway centreline. Deployment of roll spoilers on the right wing during the final stages of the descent, together with an insufficient landing flare, contributed to a hard touchdown.

The right main landing gear was about 2 m from the edge of the runway at touchdown and the pilot was unable to prevent the 737's landing gear from departing the sealed runway surface. The pilot did not detect the aircraft's increasing lateral displacement from the runway centreline until after touchdown and the excursion was not preventable due to the aircraft's flight path across the ground at touchdown and its proximity to the edge of the runway. There were no reported injuries to either the passengers or crew. The aircraft sustained minor damage.

The investigation concluded that weather conditions had contributed to the difficulty experienced by the pilot during the landing. Furthermore, Darwin's main runway is 60 m wide and significantly wider than runways at other Australian airports. The runway is not equipped with centreline lighting. The investigation found that centreline lighting would have increased the visual cues available to the pilot to safely complete the landing.

Accordingly, the ATSB has recommended the Department of Defence (as airport infrastructure owner) and Darwin International Airport Pty Ltd (as civilian facilities operator) consider installation of centreline lighting and touchdown lighting, consistent with recommended practices on runways wider than 50 m. ■

Thunderstorm damage

Occurrence 200100213

On 26 October 2003, at about 1346 EST, a Boeing 767-238 aircraft, registered VH-EAL, took off from Coolangatta Airport, Queensland, on a scheduled regular public transport service to Sydney. Shortly after

take-off, passing through an altitude of about 800 ft, the aircraft encountered heavy rain, hail and windshear, due to thunderstorm activity. During the windshear encounter, the aircraft descended about 130 ft and a ground proximity warning system Mode 3 aural alert 'DON'T SINK' sounded.

During the subsequent climb, the cabin crew reported to the flight crew that there was damage, in the form of dents, to the leading edges of the wings. The flight continued to Sydney where an uneventful landing was conducted.

The Bureau of Meteorology (BoM) reported that forecasters first became aware of the severe nature of the thunderstorm at about 1336 EST. The crew of EAL requested taxi clearance at 1339 and reported in receipt of Automatic Terminal Information Service (ATIS) Echo, however, ATIS Foxtrot was current, which included advice of thunderstorms. The surface movement controller did not advise the crew of the changed ATIS or provide them with information of the changed conditions. The storm continued to intensify and passed over Coolangatta Airport between about 1340 and 1349. EAL was issued a takeoff clearance at about 1345.

The occurrence involved a number of issues including the limitations of airborne weather radar, the mutual exchange of information between BoM and air traffic control, and provision of information to the B767 crew. Further, the occurrence involving EAL displayed a number of similarities with a Boeing 737 microburst encounter at Brisbane airport on 18 January 2001. ■

Boeing 767-33A engine failure

Occurrence 200400726

The Boeing 767-33A, registered V8-RBG, had departed Perth, WA and was on climb approaching 11,000 ft when the crew heard a loud bang and observed a high exhaust gas temperature (EGT) accompanied by loss of thrust on the right engine. The right EGT was then observed to be over limits. The right thrust lever was then closed and all recall items were actioned. The crew declared a MAYDAY and returned the aircraft for an uneventful single engine overweight landing at Perth.

Engineers examined the engine during a post flight inspection and found that the N2 section of the engine could not be rotated. There was also evidence of molten metal debris in the exit screens of a bleed valve and some metal spray in the exhaust duct.

Upon disassembly, extensive damage was noted throughout the engine. Of note during the engine inspection was the absence of arm attachment pins at the 10 o'clock and 12 o'clock positions for the variable stator vanes (VSV) leveling arms in the 6th compressor stage synchronizing ring.

The remaining four arm attachment pins between these two clock positions were also loose. A pin flare diameter check found that all pin flare diameters measured, with the exception of one pin, were below the minimum limit.

Examination showed galling to the fir tree element faying surfaces of the blade platform. There were two crack origin points, one on the pressure side of the airfoil section and the other on the opposite surface.

The fracture sites exhibited distinct beach marking and were typical of a fatigue type crack propagated under high cyclic stress. The damage to the engine was consistent with the failure of a 6th stage HPC blade.

The absence of integrity in the VSV ring leveling arm attachment allowed the vanes at those positions to move independently of the ring and remain at or adopt angles other than those commanded by the engine thrust management computer. It was likely that sub-optimal airflow induced high cyclic vibratory stress on the HPC 6th stage blades as they passed those locations. These stresses on the blades ultimately lead to the failure. ■