Australian Government
Australian Transport Safety Bureau

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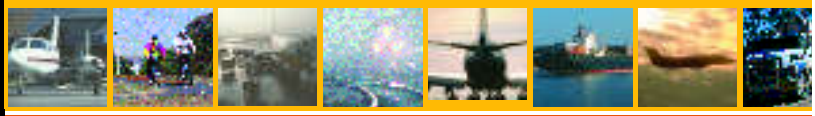

ATSB Funding Boost

The ATSB is looking forward to enhancing its contribution to aviation safety in 2004–05 and beyond thanks to a recent boost in funding. The May 2004 Federal Budget provides an extra $14.4m over four years to augment the Bureau's aviation investigation capacity and to fund a new aviation safety IT database. The Budget provides about $2.0m pa extra for aviation safety investigations from 2004–05 to boost the ATSB's annual aviation investigation capacity from about 60 new investigations currently to up to 100. Most of the $6.1m for the new database is capital funding in 2005–06 but $0.5m is provided for scoping, developing and signing an IT delivery contract during 2004-05. The ATSB is reviewing existing systems such as European ECCAIRS and AQD used by CAA New Zealand and many airlines, and will be seeking to better integrate and share non-confidential data with CASA, Airservices, and ICAO while meeting internal requirements.

To enable the ATSB to increase its aviation investigations, extra investigators with suitable skills are being recruited. The Bureau has advertised for a range of specialties including high-capacity jet pilots, air traffic controllers, cabin safety and/or human factors, a structures engineer, and either a highly qualified licensed aircraft maintenance engineer or a mechanical engineer. The additional funding will also enable the Bureau to internally shift a number of aviation investigators back from rail investigations and aviation safety research where they were deployed because of recent financial constraints. New staff will be recruited for these rail and research responsibilities.

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

Air Safety Occurrence Reporting Requirements

On 1 July 2003, the *Transport Safety Investigation Act 2003* and the *Transport Safety Investigation Regulations 2003* came into operation. This article is intended to explain what must be reported and how it must be reported under the legislation. Also see the ATSB website www.atsb.gov.au

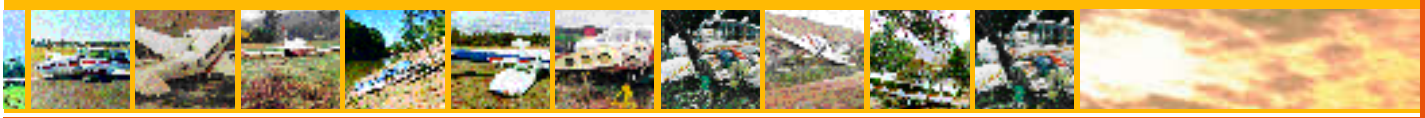
Under the Act, mandatory reportable matters are classified as either an 'immediately reportable matter' (IRM) or a 'routine reportable matter' (RRM). The Regulations detail the occurrences which fit these categories and which must be reported to the ATSB.

Under Regulation 2.3 there are IRMs listed for all aircraft operations and additional IRMs for air transport operations only. IRMs for all aircraft operations include:

- death or serious injury to a person on board an aircraft or in contact with anything attached to the aircraft or detached from the aircraft, or from jet blast
- aircraft that is missing
- aircraft that has been or thought to have been seriously damaged
- inaccessible aircraft thought to have been seriously damaged
- breakdown of separation standards in controlled airspace.

The list of occurrences constituting IRMs for air transport operations includes:

- airprox (two or more aircraft in such close proximity OCTA that safety may be jeopardised)
- violation of controlled airspace
- near collision on the ground
- narrow avoidance of flight into terrain
- rejected takeoff from or landing on a closed or occupied runway
- takeoff from a closed or occupied runway with marginal separation from an obstacle
- failure to achieve predicted performance during takeoff or initial climb
- fire or mechanical failure resulting in shutdown of an engine
- use of any emergency procedure
- flight crew incapacitation or the need for oxygen by a flight crew member
- malfunction of an aircraft system affecting safety
- fuel exhaustion or supply of useable fuel becoming so low that the pilot declares an inflight emergency
- undershooting, over-running or running off the side of a runway
- difficulty in controlling an aircraft
- failure of two or more redundant systems for flight guidance and navigation



- destruction of or serious damage to any property outside the aircraft caused by contact with the aircraft or anything that became detached from the aircraft.

Regulation 2.4 lists RRMs for both air transport operations and non air transport operations. RRMs for air transport operations include:

- minor injury to a person on board an aircraft, or in contact with anything attached to or detached from an aircraft, or from jet blast
- minor aircraft damage that compromised or could have compromised flight safety
- flight en route below minimum altitude
- GPWS alert
- critical rejected takeoff
- runway incursion
- failure to achieve predicted performance during takeoff or initial climb
- malfunction of an aircraft system or fuel starvation (not requiring declaration of an emergency) that could compromise flight safety
- weather phenomenon or operation outside the aircraft's approved flight envelope that does not cause difficulty in controlling an aircraft
- failure of an ATC facility, navigation aid or airfield facility
- misinterpretation of information or instructions by flight crew
- breakdown of ATC co-ordination or failure by ATC to provide adequate information to a pilot
- TCAS 'resolution advisory'
- occurrence resulting from loading of passengers, cargo or fuel
- collision with an animal or bird.

RRMs for operations other than air transport operations include:

- minor injury to a person on board an aircraft
- flight crew member becoming incapacitated while operating an aircraft
- airprox
- narrow avoidance of flight into terrain
- use of an emergency procedure
- difficulty in controlling the aircraft due to an aircraft system failure, a weather phenomenon or operation of the aircraft outside its approved flight envelope
- fuel exhaustion or the aircraft's supply of fuel becoming so low that the safety of flight is compromised
- collision with an animal or bird on a licensed aerodrome.

" Reports can be made by telephone to the ATSB Duty Officer on 1800 011034 in the first instance and followed up in writing. "

A 'responsible person' who has knowledge of an IRM must report it to 'a nominated official' [Executive Director ATSB or delegated person –Regulation 2.7] as soon as practicable [Act, section 18]. This must be followed with a written report within 72 hours [Act, section 19] containing the information in Regulation 2.6. An RRM only requires a written report within 72 hours of the occurrence [Act section 19]. A 'responsible person' includes a crew member, owner or operator, air traffic controller, maintenance, aerodrome or other personnel involved with the aircraft concerned [Regulation 2.5]. If a responsible person believes on reasonable grounds that another responsible person has already reported to a nominated official, then they are excused from the requirement to report [Act, sections 18 & 19]. However, if a responsible person is in doubt, it is recommended that they make the report themselves.

Reports can be made by telephone to the ATSB Duty Officer on 1800 011034 in the first instance and followed up in writing. The Air Safety Incident Report form is available in hardcopy from the ATSB or on the ATSB website where it can be completed online.

The above is only a broad guide. The authoritative documents are the Act and the Regulations to which reporters should refer. If this does not resolve uncertainty, please call the ATSB for advice. ■

What is the Australian Transport Safety Bureau?

The Australian Transport Safety Bureau (ATSB) is an operationally independent multi-modal body that investigates, analyses and reports on transport safety. The ATSB is not part of the Civil Aviation Safety Authority (CASA). The ATSB is Australia's prime agency for the independent investigation of civil aviation accidents, incidents and safety deficiences. To report an Aviation, Marine or Rail accident telephone ATSB (toll-free, 24 hours): ***1800 011 034.***

Safety briefs

Fumes on the flight deck

Occurrence 200204912

The co-pilot of the BAe146-300 noticed both cockpit side windows were open as he entered the flight deck prior to departure and detected the presence of fumes. These fumes had a distinctive odour and were consistent with contamination of the cabin air supply by lubricating oil from the aircraft's engines.

The air conditioning pack that supplies most of the air to the flight deck was de-selected and because fumes were not apparent in the passenger cabin, the co-pilot suspected that the contamination was confined to this pack only. This resulted in an immediate improvement to the quality of the air.

The co-pilot briefed the pilot in command of these observations when he arrived on the flight deck. After takeoff, the crew selected engine bleed air sources from all engines and both air conditioning packs were used to provide air to the passenger cabin and flight deck. No fumes were evident in either the passenger cabin or the flight deck and the flight proceeded normally.

About 10 minutes prior to the top of descent the co-pilot recalled starting to experience symptoms of a headache. He was able to continue his duties as handling pilot and completed the descent to the aerodrome circuit area. The aircraft was on final approach to land, when strong oil-type fumes were again detected on the flight deck. As the aircraft cabin had already stabilised at sea-level atmospheric pressure and the source of fumes appeared to be either the air conditioning packs or one of the engine bleed air supplies, all air conditioning packs and all sources of engine bleed air were selected off. The intensity of the fumes quickly dissipated and the co-pilot completed the landing. ■

Suspected carburettor icing

Occurrence 200300929

The Cessna 172G aircraft was undertaking consecutive charter flights to the Trefoil Island Aircraft Landing Area (ALA) from the Smithton, Tasmania aerodrome.

According to witnesses, at approximately 1745 hours EsuT the aircraft with the pilot and three passengers took off from the island ALA on the third return flight of the afternoon, on a magnetic heading of approximately 290 degrees. Witnesses reported that the aircraft turned to the left on a southerly heading while climbing, followed by a turn to the east. They reported that following the turn to the east, and after it had overflown the buildings on the island at approximately 200 feet above ground level, the nose of the aircraft pitch abruptly upward to an angle of 30-40 degrees. According to the witnesses, following the nose up pitching, the aircraft rolled abruptly to the left and it lost altitude and fell from line of sight. The witnesses heard the impact of the aircraft and ran to render assistance. All four occupants received fatal injuries. The aircraft was destroyed by impact forces.

The subsequent engine disassembly and examination revealed no evidence of a preimpact internal component failure or anomaly. Weather conditions at the time of takeoff were plotted on a carburettor icing probability chart and indicated 'Icing at all Power Settings'. ■

Airprox event

Occurrence 200305235

On 24 December 2003, a Boeing 737-7BK (737) operating under the instrument flight rules (IFR) was en route from Sydney and descending for a landing at Launceston Tasmania. A Socata TB10 (Tobago) operating under the visual flight rules (VFR) was en route from Hobart, Tasmania, to Sydney at 7,500 ft. As the 737 was descending through about 8,300 ft, at about 1333:53 Eastern Summer Time, the crew received a traffic advisory (TA) from their traffic alert and collision avoidance system (TCAS) about the Tobago. This was followed approximately 15 seconds later by receipt of a TCAS resolution advisory (RA) to climb. The crew responded to the RA and after arresting the aircraft's rate of descent, climbed the aircraft to approximately 9,200 ft. The pilot in command of the 737 reported that the TCAS indicated that the Tobago passed the 737 within about 200 ft vertically, slightly to the left, and certainly less than 1 NM horizontally.

Both aircraft were operating in Class E airspace that was introduced as part of the National Airspace System (NAS) phase 2b on 27 November 2003. As no prescribed separation standards are applicable in these circumstances, there was no infringement of separation standards. However, TCAS data and information obtained from the pilots of both aircraft indicate that the aircraft came into such close proximity that a threat to the safety of the aircraft may have existed. Therefore,the occurrence has been classified by the ATSB as an airprox event. ■

Loss of cabin pressure

Occurrence 200300008

The Fokker B.V. F27 MK 50 was maintaining flight level 250 (FL250), when the flight crew was alerted to a pressurisation problem by a triple chime, master caution and cabin altitude annunciation that indicated that the cabin altitude was climbing above 10,000ft. The normal cabin altitude for flight at FL250 was 8,000 ft. The flight crew donned oxygen masks and initiated the procedure for an emergency descent.

Cabin crew were alerted to a problem by the illumination of the fasten seat belt sign and a change in aircraft attitude and they advised passengers by the public address (PA) system to fasten their seat belts. Shortly after, the flight crew used the interphone to advise the cabin crew of the loss of cabin pressure. The cabin crew made another PA to advise passengers of the situation and secured the galley before sitting in their crew seats.

The operator's flight operations manual loss of cabin pressure procedure (decompression) 'Immediate Action for All Cabin Crew', required cabin crew to secure the bar/meal cart, sit down if a seat was available, or hold on securely to a rigid structure and, if near a PA handset, advise passengers to fasten their seat belts. The procedure also advised cabin crew to use portable (supplemental) oxygen themselves, if required, once the aircraft had reached a safe altitude. None of the cabin crew felt the need to use supplemental oxygen.

As a result of its investigation, the operator has:

- increased the frequency of maintenance inspections of the wiring on the main landing gear, including the junction boxes, and introduced a detailed inspection that includes removal of the junction box cover, inspection of the connections and resealing of the cover, and
- amended the 'Loss of Cabin Pressure' section of the flight operations manual to require cabin crew to use portable oxygen for at least 30 seconds to one minute after flight crew advise that an aircraft has reached a safe altitude. ■

Loss of separation standards

Occurrence 200201725

An infringement of separation standards occurred 70 NM east of Darwin, NT, between a descending Boeing 737 (737) and an Embraer EMB-120 (Brasilia), which was maintaining level flight. The 737 was intentionally descended through its assigned level when the crew responded to a Traffic Alert and Collision Avoidance System (TCAS) warning. The aircraft passed within 1.6 NM horizontally and 600 ft vertically. The required separation standard was either 3 NM or at least 1,000 ft.

The incident occurred at the transfer of control point between Brisbane Centre and Darwin Approach. The Brasilia was under the control of Brisbane Centre, with instructions to maintain flight level (FL) 210. The 737 was en-route from Brisbane to Darwin and was on descent to FL220. Those routes placed the two aircraft on almost reciprocal tracks. As the 737 was passing FL235, the crew were instructed by the Brisbane sector controller to contact Darwin approach control for further descent, but were not advised of the opposite direction traffic.

Shortly after acknowledging the instruction to change frequency, the 737 crew received an aural 'traffic, traffic' warning and a display indication of an aircraft 5 NM ahead. The pilot in command stated that the traffic advisory quickly changed to a resolution advisory (RA) with a 'descend, descend, descend' aural alert. Given that the 737 was above the Brasilia, it would be normal for the initial TCAS advisory to have been a 'reduce descent' or a climb advisory. As the aircraft was approaching its assigned level the pilot disconnected the autopilot and pitched the aircraft nose down with the intention of following the RA commands. On passing FL220 the TCAS command abruptly reversed to a climb RA (aural 'climb, climb now') which was followed positively by the pilot. The climb annunciation continued until the aircraft was at FL225. No more commands were issued and there was no TCAS 'clear of conflict', which is normally generated once a RA is removed. ■

Inflight loss of control

Occurrence 200203074

On the evening of 28 June 2002, a Saab 340B was being operated on a regular public transport service, from Sydney to Bathurst, NSW and had commenced a descent for a Katoomba-Bathurst Global Positioning System arrival and landing on runway 17. The pilot reported that as the aircraft descended to the minimum descent altitude (MDA), visibility alternated between visual and instrument flight conditions. During the descent, the pilot had retarded the power to about 17 per cent and slowed the aircraft to about 135 kts in preparation for a Category B circling approach.

At the MDA, the aircraft's Flight Guidance and Autopilot System captured the altitude and, as the airspeed was decreasing due to the reduced power setting, commanded the trim system to progressively raise the nose of the aircraft. The pilot commanded the autopilot to roll the aircraft to the right to begin tracking downwind for runway 17. At about this time,the copilot observed that the airspeed was decreasing and called 'speed'. As the pilot applied power, the aircraft rolled to the left,pitched down without warning and descended to 112 ft AGL. He regained control of the aircraft and climbed it to the missed approach altitude.

The aircraft's aerodynamic stall warning systems of stick shaker, audible alarm, visual warnings and stick pusher, did not activate during the roll.

The investigation determined that following capture of the MDA by the autopilot, the aircraft speed continuously decreased due to an insufficient power setting. As a consequence, the aircraft stalled. However, this occurred prior to the stall warning system operating due to the presence of airframe ice that had accumulated during the descent.

The investigation found that it is possible for the aircraft to stall prior to the activation of the stall warning system if the aircraft had accumulated ice on the wings. ■