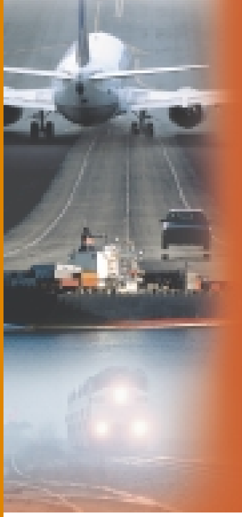
Australian Transport Safety Bureau – Supplement



ATSB Australian Transport Safety Bureau

Air Safety Investigations

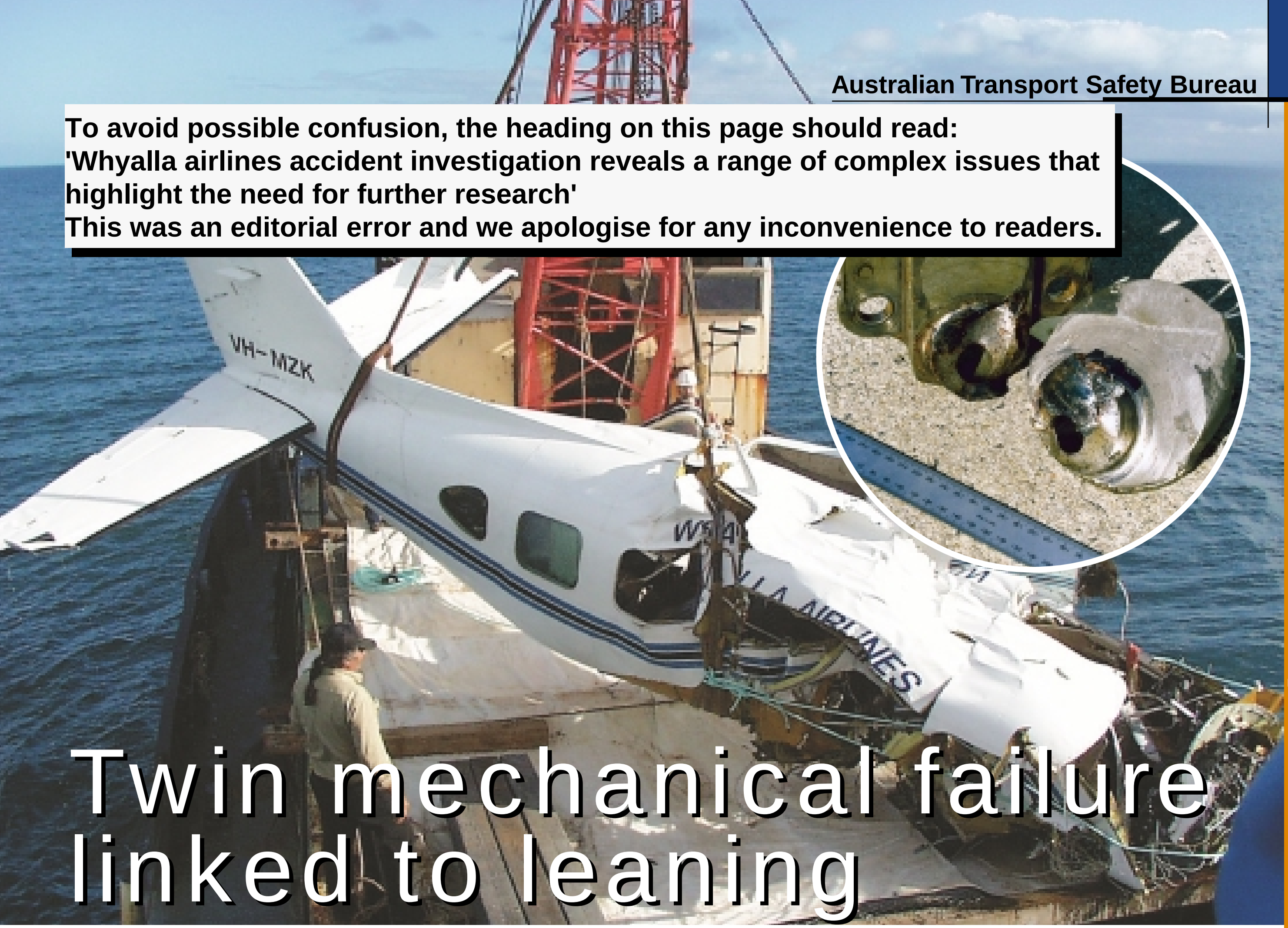
Recently completed investigations

As reports into aviation safety occurrences are finalised they are made publicly available through the ATSB website at www.atsb.gov.au

Published November–December 2001

Occ. no.	Occ. date	Released	Location	Aircraft	Issue
200003594	20-Jun-00	24-Dec-01	4 km NE Armidale NDB NSW	Pacific CT4B/Beech 1900D	Traffic confliction
200100477	3-Feb-01	24-Dec-01	19 km N Melbourne Vic.	Boeing 717-200	Inflight engine shut down
200102544	9-Jun-01	24-Dec-01	4 km SE Bathurst Island NT	Piper PA-31-350	Engine failure
200005948	2-Dec-00	21-Dec-01	102 km W Southern Cross WA	Beech 200C	Fumes in cabin
200005684	29-Nov-00	20-Dec-01	Melbourne Vic.	Boeing 737-476	Tailskid strike
200003233	3-Aug-00	20-Dec-01	4 km NNE Cairns Qld	Cessna P206C	VFR into IMC–loss of control
200002644	10-Jun-00	20-Dec-01	Wagga Wagga NSW	Saab SF-340A	Low engine RPM on take-off
200104092	29-Aug-01	20-Dec-01	Mount Archer QLD	Agusta SPA 47-G-2A1	Flight into mountain waves
200002157	31-May-00	19-Dec-01	28 km SE Whyalla SA	Piper PA-31-350	Double engine failure
200103923	17-Aug-01	17-Dec-01	Narrabri NSW	De Havilland DHC-8-103	Smoke in cabin
200100135	15-Jan-01	17-Dec-01	106 km NE Maui (OGG) VORTAC	Boeing 747-400/MD-11	Traffic confliction
200103164	16-Jul-01	17-Dec-01	5 km NNW Cairns VOR QLD	Cessna 402C/DHC-8-102	Infringement of separation standards
200102239	23-May-01	14-Dec-01	60 km S Townsville QLD	Schweizer 269C	Engine failure
200003949	2-Sep-00	14-Dec-01	24 km NNE Port Keats NT	Piper 600A	In-flight breakup
200004806	29-Jun-00	14-Dec-01	9km S Williamtown NSW	Cessna 340/Macchi MB-326	Infringement of separation
200103430	2-Aug-01	11-Dec-01	Melbourne Vic.	Boeing 737	Tyre tread separation
200104707	29-Sep-01	4-Dec-01	Southport QLD	Avtech JABIRU ST3	Undershoot during glide approach
200101409	1-Apr-01	4-Dec-01	Melbourne Vic.	Boeing 737-476	Towmotor towbar collision
200003267	29-Jul-00	19-Nov-01	30 km S Yarromere Station QLD	Robinson R22 BETA	Engine failure–loss of control
200101866	22-Apr-01	16-Nov-01	Darwin NT	Boeing 747SP-38	Door disarm failure
200101606	9-Apr-01	16-Nov-01	Sydney NSW	Boeing 767-204	Inoperative emergency slide
200004707	14-Oct-00	12-Nov-01	Hobart Tas.	Boeing 737-476	Turbine blade failure
200100035	2-Jan-01	9-Nov-01	Gunnedah NSW	Embraer-Empresa EMB-820-C	Out of trim condition
200100584	7-Feb-01	7-Nov-01	Longford Helicopter Landing Site Vic.	Sikorsky S-76C	Turbine blade separation
200005030	1-Nov-00	7-Nov-01	Sydney NSW	Airbus A340-300	Loss of directional control on landing
200003847	30-Aug-00	2-Nov-01	9 km E Townsville QLD	S.O.C.A.T.A. TB-10/BAe 146	Infringement of separation
200002485	13-Jun-00	2-Nov-01	167 km NW Darwin NT	Fairchild SA227-DC/Airbus A330	Infringement of separation
200002060	23-May-00	2-Nov-01	19 km S Gibraltar NDB NSW	Boeing 737-377/Boeing 737-33A	Infringement of separation

To avoid possible confusion, the heading on this page should read:
'Whyalla airlines accident investigation reveals a range of complex issues that highlight the need for further research'
This was an editorial error and we apologise for any inconvenience to readers.



Twin mechanical failure linked to leaning

The final report on the Whyalla Airlines Piper Chieftain VH-MZK accident on 31 May 2000, in which all eight occupants died, was released on 19 December 2001 by the Australian Transport Safety Bureau.

ATSB Executive Director, Kym Bills, made the following statement: “The VH-MZK accident occurred after mechanical failures involving both engines forced the pilot to ditch the aircraft in Spencer Gulf, about 26km from Whyalla, on a dark, cloudy and moonless night.

Based on careful analysis of the engine failures and recorded radar and audio data, it is likely that the left engine failed first as a result of a fatigue crack in the crankshaft. This was initiated about 50 flights before the accident flight due to the breakdown of a connecting rod bearing insert. The combined effects of high combustion gas pressures developed as a result of deposit-induced pre-ignition, and lowered bearing insert retention forces due to an ‘anti-galling’ lubricating compound used during engine assembly by the manufacturer, led to this breakdown.

Lean fuel practices used by the operator increased the likelihood of lead oxybromide deposit-induced pre-ignition but were within the engine operating limits set by the aircraft manufacturer.

It is likely that because of the increased power demanded of the right engine after the left engine failed, abnormal combustion (detonation) occurred and rapidly raised the temperature of the pistons and cylinder heads. As a result, a hole melted in the number 6 piston causing loss of engine power and erratic engine operation. The subsequent ditching involved great pilot skill.

The ATSB examined components from a further ten similar engines that have failed since January 2000 (including two engines from another manufacturer) in order to better understand the failure mechanisms. Combustion chamber deposits that may create lead oxybromide deposit-induced pre-ignition were found in these engines. The Bureau concluded that engines that were operated at lean fuel-air mixtures during climb, and towards best economy mixtures during cruise flight, were more likely to show signs of such deposit-induced pre-ignition than those engines operated at full rich mixture during climb and at best power mixture during cruise.

On 30 October 2000 ATSB released recommendations about the risks of detonation and lean running and in relation to the desirability of life jackets and other life-saving equipment on smaller passenger aircraft flying over water. ATSB releases further recommendations to:

- the US FAA in relation to engine deposits that may cause pre-ignition;
- the US FAA and the engine manufacturer on the use of anti-galling compounds between connecting rod bearing inserts and housings during engine assembly;
- CASA in relation to high power piston engine reliability more generally; and
- CASA in relation to providing guidance to pilots on ditching.

While there were deficiencies with the Whyalla Airlines safety culture and gaps with the extent of the regulator’s surveillance of the operator, neither were significant accident factors.

No-one should be blamed for this accident, but if the lessons from it are learned, both in Australia and internationally, some good will have come from the tragic deaths of eight people.”

The investigation report is published on the ATSB internet site www.atsb.gov.au ■

Helicopter accident highlights mountain wave dangers

The pilot of an Agusta 47 G was fatally injured when he lost control of the helicopter after it was damaged in severe mountain turbulence and crashed on the north east slope of Mount Archer, Queensland on 29 August 2001.

THIS was the main finding in the final accident report which was released by the ATSB on 20 December.

"The extensive damage to the helicopter, severed tailboom and the location of parts on the ground, led transport safety investigators to conclude that the main rotor blade may have contacted the tailboom in flight," Air Safety Deputy Director, Alan Stray said.

"This type of damage was consistent with flying into mountain wave turbulence, and may have occurred from one of two events: blade flapping (divergence of the main rotor blade from its normal plane of rotation encountered during severe turbulence) or the pilot's instinctive reaction to pull up after a sudden nose-down pitch from a change in the helicopter control input (collective lever friction failure in turbulence causing the non-powered collective lever to drop).

"Weather conditions at the time were conducive to mountain waves on the north-east slope of Mount Archer near where the wreckage was found."

The pilot was on a training navigation flight and had not been briefed on the weather conditions by the flight training school before departure from Maroochydore. In addition, the pilot's flight planning notes did not take into account the forecast winds.

Encounters with mountain waves have led to catastrophic events in the past and pilots needed to be highly aware of their potentially deadly effects when interpreting weather forecasts and planning flight over mountainous terrain.

"In Australia mountain waves are experienced over and on the lee side of mountain ranges in the south-east of the continent and in westerly wind flows over the east coast in late winter and early spring. It is absolutely essential that aviators are aware of the wind and its potential effects on aircraft.

"We hope that out of this tragedy, a greater pilot awareness of mountain waves will save lives in the future," Mr Stray said.

The helicopter had no known maintenance deficiencies and was considered capable of normal flight prior to the accident.

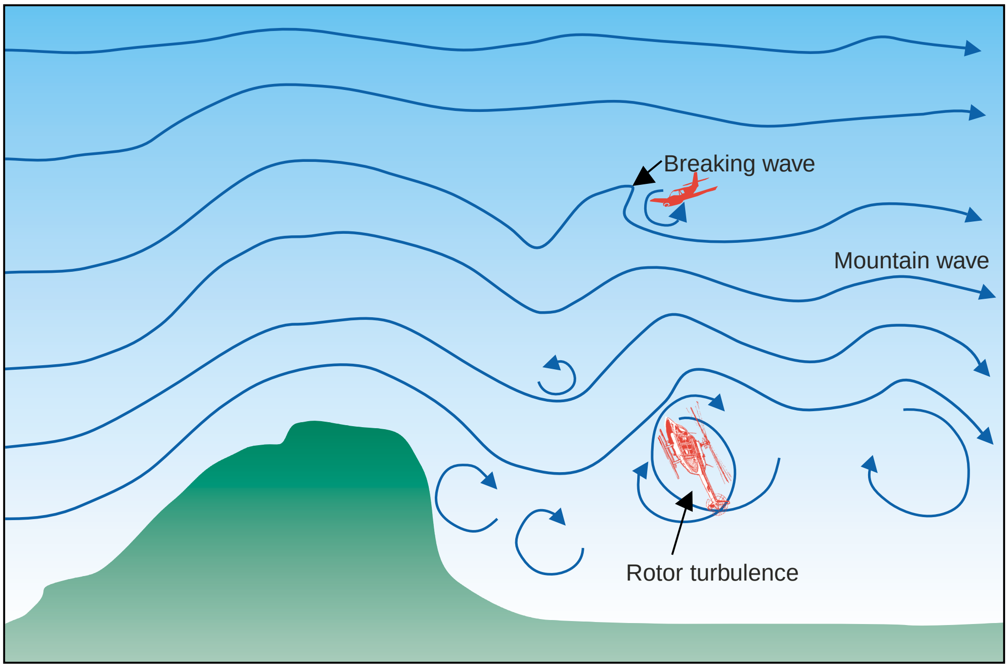
Mountain wave turbulence

In Australia, mountain waves and 'rotors' are commonly experienced over and to the lee of mountain ranges in the south-east of the continent. They often appear in the strong westerly wind flows on the east coast in late winter and early spring.

Mountain waves and 'rotors' are among the more hazardous phenomena aircraft can experience. Understanding the dynamics of the wind is important in improving aviation safety.

Glider pilots learn to use these mountain waves to their advantage however some aircraft have come to grief. Encounters have been described as similar to hitting a wall. In 1966, a mountain wave ripped apart a BOAC Boeing 707 while it flew near Mt Fuji in Japan. In 1968, a Fairchild F-27B lost parts of its wings and empennage, and in 1992 a Douglas DC-8 lost an engine and wingtip in mountain wave encounters.

Mountain waves are the result of flowing air being forced to rise up the windward side of a mountain barrier, then as a result of certain atmospheric conditions, sinking down the leeward side. This 'bounce' forms a series of standing waves downstream from the barrier and may extend for hundreds of kilometres, which can be felt over clear areas of land and open water.



Modified from source document. SOURCE: Bureau of Meteorology (draft). *Aviation Meteorology* (2nd edition).

Formation of mountain waves relies on several conditions. The atmosphere is usually stable and an inversion may exist. The wind has to be blowing almost constantly within 30 degrees perpendicular to the barrier at a minimum speed of about 20 to 25 knots at the ridgeline. Wind speed increases uniformly with height and blows in the same direction. Wave 'crests' can be upwind or downwind from the mountain range and their amplitude seems to vary with the vertical stability of the flow. The crests of the waves may be identified by the formation of lens-shaped or lenticular clouds, depending on sufficient moisture in the air. Mountain waves may extend into the stratosphere and become more pronounced as height increases. Some pilots have reported mountain waves at 60,000 feet. The vertical airflow component of a standing wave may exceed 8,000 feet per minute.

> **“ Many dangers lie in the effects of mountain waves and rotors on aircraft performance and control ”**

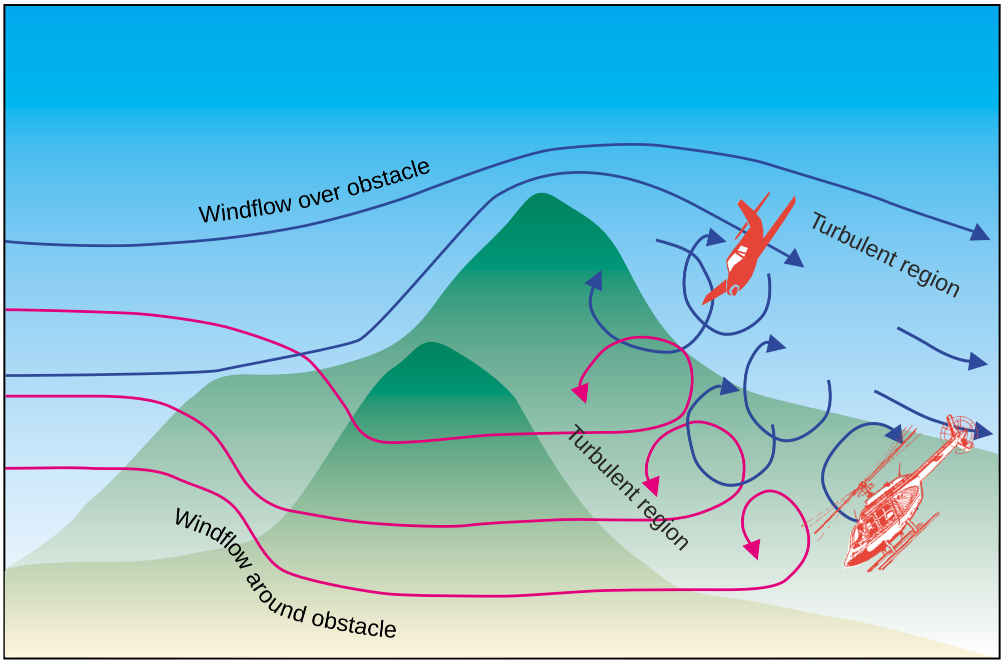
Rotors or eddies can also be found embedded in mountain waves. Formation of rotors can also occur as a result of down slope winds. Their formation usually occurs where wind speeds change in a wave or where friction slows the wind near to the ground. Often these rotors will be experienced as gusts or windshear. Clouds may also form within a rotor.

Many dangers lie in the effects of mountain waves and rotors on aircraft performance and control. In addition to generating turbulence that has demonstrated sufficient ferocity to significantly damage aircraft or lead to loss of aircraft control, the more prevailing danger to aircraft in the lower levels in Australia seems to be the effect on the climb rate of an aircraft. General aviation aircraft rarely have performance capability sufficient to enable the pilot to overcome the effects of a severe downdraft generated by a mountain wave or the turbulence or windshear generated by a rotor. In 1996, three people were fatally injured when a Cessna 206 encountered lee (mountain) waves. The investigation report concluded, “It is probable that the maximum climb performance of the aircraft was not capable of overcoming the strong downdrafts in the area at the time.”

Crossing a barrier into wind also reduces the groundspeed of an aircraft and has the effect of keeping the aircraft in the area of downdraft for longer. An aircraft flying downwind is likely to place an aircraft in an updraft as it approaches rising ground. Rotors and turbulence may also affect low level flying operations near hills or trees. In 1999, a Kawasaki KH-4 hit the surface of a lake during spraying operations at 30 feet. The lack of sufficient height to overcome the effects of wind eddies and turbulence was implicated as a factor involved in the accident.

Research into mountain waves and rotors or eddies continues but there is no doubt that pilots need to be aware of the phenomenon and take appropriate precautions. Although mountain wave activity is normally forecast many local factors may effect the formation of rotors and eddies. When planning a flight a pilot should take note of the winds and the terrain to assess the likelihood of waves and rotors. There may be telltale signs in flight, including the disturbances on water or wheat fields and the formation of clouds, provided there is sufficient humidity to provide for cloud formation.

Some considerations include allowing for the possibility of significant variations in the aircraft's altitude if up and downdraughts are encountered. A margin of at least the height of the hill or mountain from the surface should be allowed. Ultimately, it may be preferable for pilots to consider diverting or not flying, rather than risk flying near or over mountainous terrain in strong wind conditions conducive to mountain waves and rotors.



Modified from source document. SOURCE: Bureau of Meteorology (draft). *Aviation Meteorology* (2nd edition).

Further reading

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Safety briefs

Loss of control on dark night

Occ Report 200003949

An Aerostar 600A pilot was fatally injured when he lost control of the aircraft on a dark night during the climb after takeoff from Port Keats, NT on 2 September 2000. The left wing had separated from the airframe in flight, which was consistent with aerodynamic loads in excess of the aircraft structural limit during a high speed or unusual attitude recovery manoeuvre.

The pilot was returning to Darwin on an Instrument Flight Rules charter after unloading passengers. At 2119 the pilot reported taxying and was not heard from again.

The following morning a number of major structural components of the aircraft, including the outer left wing, were located at a position 24 km north-east of Port Keats aerodrome and close to the flight planned track. The main portion of the wreckage was found four days later and was destroyed by ground impact.

The investigation was unable to conclusively determine the circumstances that led to the loss of control and subsequent inflight airframe break-up. However, possible pilot distraction on a dark night with few visual clues and physiological factors could not be disregarded.

Jabiru accident on approach in mechanical turbulence

Occ Brief 200104707

A Jabiru ST3 undershot on approach to runway 19 at Southport aerodrome in Queensland on 20 September 2001 after an attempted go-around from a glide approach fatally injuring its two occupants.

The pilot and passenger were conducting a private flight in the pilot's aircraft. The pilot had broadcast the intention to conduct a simulated engine failure and glide approach.

The aircraft impacted a steep embankment on the approach 210 metres from the displaced threshold in a moderately nose-high, left wing-low attitude. The engine was delivering significant power at the time of impact.

There were no known flight control deficiencies and the evidence indicated that the aircraft was capable of normal flight prior to the accident.

Local procedures required pilots to conduct right circuits when operating on runway 19. Tall trees adjacent to the aerodrome induced localised mechanical turbulence, windshear and downdrafts when the wind was from the southeast. At the time of the accident the wind was recorded on the Gold Coast Seaway as 150 degrees at 15 knots gusting to 18 knots.

It is likely the aircraft entered an area of turbulence and high sink rate generated by the prevailing wind over the adjacent trees. Given the evidence of significant power at the time of impact, it is possible the pilot had initiated a go around at a stage in the approach from which it was not possible to establish a positive rate of climb.

Failed turbine blade caused extensive damage

Occ Report 200004707

A Boeing 737 engine was shut down in flight after it was extensively damaged from a failed high-pressure turbine blade on 14 October 2000. The aircraft was on climb from Hobart and returned to land.

A 15 x 20 mm segment of the trailing edge of the blade had broken away, and passed through the engine causing extensive damage to all four stages of the low-pressure turbine assembly, rendering the engine inoperative.

Metallurgical examination of the failed blade (see ATSB Technical Analysis Report No. 3/01) indicated that the loss of the blade section was due to the progression of fatigue cracking into the blade section from an area of cracking and notching on the blade tip. The cracking had progressed into the blade parent Rene 125 material through an extensive Inconel 625 weld repair beneath the tip of the notching.

The ATSB concluded that the inferior Inconel 625 alloy was used in a tip repair in 1995, which had allowed the tip crack to continue rapidly through the region of the repair into the parent material below.

A number of safety recommendations were made to the manufacturer, General Electric Aircraft Engines, the US Federal Aviation Administration and CASA. The ATSB will publish responses to the recommendations on the web, www@atsb.gov.au

Rotor blade life exceeded

Occ Report 200003267

It is believed that exceeding the published service life of a helicopter main rotor blade led to its catastrophic failure on 29 July 2000.

The Robinson R22 Beta helicopter was engaged in mustering operations and developed a lateral shudder during the transition to flight at an altitude of approximately 200ft above ground level. The shudder intensified, the helicopter shuffled to the right and the pilot lost directional control. The helicopter impacted the ground and was destroyed. The pilot and observer were found lying on the ground forward of the cockpit. The pilot died while enroute to hospital.

The main rotor blades had separated in flight and only one blade remained attached to the main rotor hub. The missing main rotor blade was found 105 metres from the accident site and had a fracture at the blade root fitting. The failure was identical to a previous Australian occurrence where the blade had exceeded the service life and the manufacturer's failure tests.

There was anecdotal evidence from witnesses familiar with the helicopter's operations that suggested it might have been operating more hours than was being documented. Other evidence suggested the helicopter operating hours were being under-reported and supported witness accounts.

Although dynamic components on helicopters are tested to establish their service life, the material of each component ages and deteriorates differently. It is not possible to predict the exact failure time of a particular component. The component usage also varies depending on flight regime. For this reason the manufacturer utilises the median failure life of the tested components to establish a conservative service life.

Exceeding the published service life of components eliminates the in-built safety margin established by testing. Overflown dynamic components under load normally fail catastrophically without advance warning. ■

Cessna 206 accident at Cairns in non-VMC and darkness

Occ Report 200003233

A Cessna 206 on a visual flight rules charter impacted the water in below VMC weather and darkness during a third attempt to land at Cairns Airport on 3 August 2000, fatally injuring the pilot and passenger.

The pilot had landed the aircraft at Margaret Bay earlier to collect a load of fresh seafood for delivery to Cairns and to carry a passenger in need of medical attention.

Despite a later than planned departure from the bay that would clearly put the aircraft at Cairns after last light and in weather conditions reported as below visual meteorological conditions the pilot elected to continue the flight. The aircraft tracked coastal at low altitude and from north of Cairns was provided with navigation assistance by the Cairns Approach controller to remain clear of terrain and to an approach for runway 15.

Heavy rain, patchy low cloud, poor visibility and darkness contributed to the pilot being unable to see the runway lights during two unsuccessful approaches. On the third approach, as the controller was vectoring the aircraft to better position the pilot to use the runway approach lighting for guidance, the aircraft disappeared from radar 2 NM north-east of Cairns airport. An immediate search found some debris and the body of the passenger. It was three months before the main wreckage was found but there has been no trace of the pilot.

Planning for the flight had allowed little or no margin for delay or weather unsuitable for a visual flight rules flight. The investigation found no evidence of any contingency planning. The pilot, in deciding to depart and later to continue to Cairns, may have been influenced more by the passenger's need to for medical attention and the perishable nature of the cargo than by the need to remain in visual meteorological conditions. ■

One engine simulation risk from 'flight idle'

Occ Report 200000492

A simulated engine failure after takeoff in a Beech 1900D Airliner on 13 February 2000 resulted in a serious loss of control after an incorrect engine-out training procedure was used.

The pilot-in-command had retarded the power lever to the 'flight idle' position. The handling pilot applied full right rudder and right aileron to counter the left yaw, but the yaw continued until power was restored. The aircraft did not climb above 160 feet above ground level and at one stage descended to about 108 feet.

Once at 2,000 feet the pilot-in-command simulated another engine failure of the left engine and the aircraft once again lost controllability. Power was restored and the aircraft landed without further incident.

The ATSB report into the incident concluded that the practice of setting 'flight idle' to simulate one-engine inoperative significantly increased the risk of degraded aircraft performance. The practice also resulted in the simulation of simultaneous failures, and unnecessarily increased the risk of in-flight training exercises. Those increased risks had the potential to increase the hazard of unintended flight into terrain and the consequent loss of life and/or damage to property and the environment.

Following the simulation the handling pilot applied an inappropriate handling technique and the aircraft speed was permitted to deteriorate below the scheduled V2 speed.

The operator's check pilots did not comply with the instructions in the CASA-approved Training and Checking Manual relating to the limits for inflight simulation of failures.

CASA has taken a number of safety actions, including surveillance of turbo-propeller aircraft operators and an amendment to Civil Aviation Advisory Publication (CAAP) 5.23-1(0).

The occurrence demonstrated the potentially serious consequences of degraded aircraft performance by setting 'flight idle' to simulate one-engine inoperative. The report states that the practice has the potential to jeopardise the safety of flight and should be strongly discouraged. ■

Confidential Aviation Incident Reporting

THE terrorists attack in the United States on 11 September last year has resulted in an increased level of reporting on airport and aircraft security concerns. These reports are extremely useful and the de-identified content is being forwarded on to relevant authorities. The CAIR program strongly encourages anyone involved in the aviation industry that becomes aware of a security breach or a weakness in a security defence to submit a report to CAIR.

In these times of change and uncertainty in the aviation industry, pilots, flight attendants and engineers are encouraged to ensure that safety defences remain effective. CAIR offers a unique opportunity to do something positive with your concerns.

The Confidential Aviation Incident Reporting (CAIR) system helps to identify and rectify aviation safety deficiencies. It also performs a safety education function so that people can learn from the experiences of others. The reporter's identity always remains confidential. To make a report, or discuss an issue you think is relevant, please call me on 1800 020 505 or complete a CAIR form, which is also available from the Internet at www.atsb.gov.au

Chris Sullivan
Manager CAIR

CAIR reports

Procedures OCTA (CAIR 200005226)

The Cessna 310 broadcast a change of level between [location A] *and* [location B] *from A075 to A065 non-standard to maintain VMC. The criteria for the selection of cruising levels are detailed in AIP ENR 1.7-5 para 3.1.3 (CAR 173). As this aircraft is IFR capable, the correct procedure would have been to upgrade to IFR. A considerable number of pilots are of the assumption that if cloud exists on their track, they may fly non-standard.*

Response from CASA: In relation to selection of non-standard cruising levels, CAR 173 requires pilots of VFR aircraft operating at an altitude of 5,000 feet AMSL to operate at a cruising level in accordance with the magnetic track the aircraft is flying. CAR 173 also requires CASA to notify in AIP the cruising levels appropriate to an aircraft's magnetic track.

AIP ENR 1.7 para 3.1.3 requires VFR flights in class E or G airspace to be flown at levels in accordance with Section 5 (Table B – VFR Cruising Levels) when operating at a height above 5,000 feet AMSL. This reference also requires pilots flying below 5,000 feet AMSL to operate in accordance with these levels whenever practicable.

The pilot of a VFR aircraft operating above 5,000 feet AMSL who is unable to maintain a cruising level in accordance with AIP requirements should, if deviating temporarily from the requirement, broadcast his/her intentions when deviating from and returning to the appropriate level.

If a longer-term deviation is necessary, the pilot should, if able, descend below 5,000 feet and continue operations in accordance with AIP ENR 1.7 para 3.1.3. Only as a last resort should the pilot of a VFR flight maintain a non-standard level for extended cruise above 5,000 feet AMSL.

ATC familiarisation days

(CAIR 200005283)

After an absence of more than 14 days, [air traffic controller] *familiarisation is required on all sectors for which an endorsement is held. Currently, for a period of absence of 15–28 days, two familiarisation days are allocated. In my case, and many other cases, we hold four to five endorsements. It is totally impractical to gain currency and proficiency on all sectors within two days. We work high traffic levels feeding into the* [ATC location]. *In order to regain speed and proficiency, we need to see at least one busy period or "gaggle" to feel comfortable to operate solo.*

Two days familiarisation is considered insufficient to regain required skills and it is a dangerous thought to believe it can be done.

Response from Airservices Australia: [Airservices] policy provides considerable flexibility for management at the operational level as it is inappropriate to impose a definitive requirement however guidelines are published. Management is accountable for any decision on the amount of familiarisation to be provided.

During the familiarisation process both the controller familiarising and the observing controller must agree that the former has demonstrated competency and proficiency to act in the position or function.

With respect to the concerns expressed in the report, as a general rule two days is considered sufficient for a controller to familiarise in [location].

Helicopter maintenance concerns (CAIRs 200100448/200100541)

First Report: *After* [pilot's name] *had landed at* [location] *he was doing a post-flight inspection when he discovered a large pair of pliers very close to the co-pilot RHS tail rotor pedals. It could have easily jammed the pedals of the helicopter. An internal incident report was raised, but nothing much was done about it.*

Second Report: *After landing, a crewmember heard a rattle in the tail of the aircraft. Subsequent investigation found a tail rotor drive shaft bolt had come out of the drive shaft. One of the three bolts had fallen out.*

The company suspects sabotage. Others suspect poor engineering practices. This will be covered up by management and engineering. I request that ATSB investigate this and many other incidents as soon as possible before someone gets killed.

CAIR note: An Alert Bulletin was issued to CASA to highlight a raised level of concern.

Response from CASA: CASA has investigated the issues raised in the reports. The investigation has revealed that the operator has taken appropriate action to address systemic problems and training requirements that have been highlighted by their own internal investigation.

CASA will conduct further surveillance to ensure that these actions continue to function as effective solutions.

Unserviceable runway surface

(CAIR 200101737)

A reporter telephoned the CAIR office to advise that CASA was allowing the operator of [regional aerodrome] to not issue a NOTAM when changes were noted to the physical condition of the aerodrome, contrary to the operator's obligations detailed in CAR 89 (O). Instead, the operator would place a dumb-bell adjacent to the windsock and would not arrange for a NOTAM to be issued. There was an entry about the dumb-bell in ERSA.

Response from Aerodrome Operator: A NOTAM was not requested from Airservices Australia on this occasion, as it is understood that CASA resolved this issue several years ago and no longer require these [NOTAMS] to be issued under these circumstances. If the sealed or gravel runway become unserviceable for any reason, a NOTAM is to be issued but the dumb-bell may be used to indicate unserviceability of grassed areas.

CAIR note: A second CAIR report was received concerning the aerodrome operator. This report involved the unserviceability of the gravel runway 05/23, where a NOTAM was not issued and the dumb-bell was used. The legislation appears to be quite clear in this regard. While an entry in ERSA and the significance of the dumb-bell is useful as a warning to itinerant aircraft, the issuance of a NOTAM formally prepares aircrew of potential hazards during the planning phase of their operation.

Response from CASA: In April 2001, CASA issued an amendment to its Civil Aviation Advisory Publication (CAAP) 89-R (1) 'Use of restricted operations (dumb-bell) ground signals'. The effect of the amendment was to clarify to Aerodrome Operators the circumstances under which a NOTAM has to be issued in conjunction with the use of dumb-bell system.

Part 4.1 of the CAAP now states:

At an aerodrome with access to the NOTAM system, a NOTAM should be initiated when:

1) Operation to an unsealed runway is precluded due to soft-wet surface; and
2) The aerodrome is used for straight in approaches such that pilots do not necessarily see the ground signal before landing.

LTOP runway changes

(CAIR 200103127)

At 1855, a decision was taken to change from 16 parallel operations to "Noise Sharing" mode R07 arrivals/R16 departures when there were in excess of 15 aircraft due to taxy for departure. In addition, the runway change was to last only until 2010 because of a lighting shortage, Runway 07 could not be used past last light, causing three changes of Runway between 1730 and 2010. I consider all of the above to be contrary to safety.

Response from Airservices Australia: The comments below address the CAIR specific example, as related to the risks of the LTOP Safety Case outlined above:

- Managing the arriving sequence through the change

When changing runway, the number of aircraft in the arrivals sequence that need to be managed whilst the change is occurring is always taken into consideration before initiating the change. Time of change is chosen based on traffic numbers. If there are outside influences such as runway lighting that force time of change, consideration is given to an early change when traffic is lighter or traffic is delayed enroute to reduce complexity.

- Coordinating movements through unstructured airspace during transition to new airspace, and establishing new airspace agreements.
- Each change will require a change of airspace, a change to clearance issued, and a change to the coordination required.

The change from 16 parallel to Mode 14a makes one minor change to airspace. The risk that aircraft are taken through unstructured airspace is not an issue. The ownership of a portion of airspace around the runway 07 approach path changes from Departures to Director. To ensure departing aircraft do not infringe this airspace the only change to procedure is to issue a radar transition for western jets. The standard transition does not provide separation assurance. Coordination is not required to initiate the change to these clearances. Clearances for other aircraft remain the same.

- Runway change may require the use of another cross runway to facilitate the change.

The concept of planned runway change is utilised. A lead-time is used and traffic numbers are considered. The last and first movements are identified together with the times at which the changes take effect.

Four years of experience with LTOP traffic management techniques and mode selection has seen refined Mode management techniques which adequately address the risks associated with runway changes as outlined in the LTOP safety case. These management techniques are the same as the risk mitigation strategies stated in the LTOP Stage 1 Safety Case and subsequent PIRs. Statistics prove that runway changes are being kept to a minimum. The two hour rule no longer applies. A decision to change runway is not based solely on noise sharing, taxiing times, time of day or time since last runway change. A change is not undertaken until traffic complexity, degree of airspace change and associated risks are considered.

CAO 48 exemptions

(CAIR 200104638)

An Australian pilot is employed by [ABC Airlines]. [ABC Airlines] *operates under the flight and duty times exemption to CAO 48. How does the exemption apply to the pilot when flying internal domestic sectors within New Zealand?*

Response from CASA: If the pilot in the report is not flying for [ABC Airline], then the CAO 48 exemption does not apply.

If the pilot is flying for [ABC Airlines] then the pilot is working under their AOC, irrespective of location, and the exemption therefore applies. The exemption, from the requirements set out in paragraph 1.4 of section 48.1 of the Civil Aviation Orders, is applicable to [ABC Airlines] and to the flight crew members working for [ABC Airlines].

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