



No blame

Every ATSB investigation report includes the text:

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material or sufficient weight to support the analysis and findings.

Simply put, we're not in the business of blaming people for accidents or incidents—but we are in the business of explaining what happened so we can minimise the chance of it happening again. This 'no blame' approach has major benefits for improving transport safety. It ensures that people are willing to give us sensitive information without fear that it will be used against them. This helps us understand dimensions of an accident or incident that might otherwise be unknown to us. We use this information to identify safety issues, to promote safety action and to educate.

It is sometimes the case, however, that the facts of an accident speak for themselves. And we put those facts on the table so everyone understands what happened and why we have arrived at our conclusions.

As a result, I've seen more headlines than I'd like that start with the words 'ATSB blames.' We don't. Our investigators take our no-blame mandate very seriously. It is a foundation of their work and of ATSB culture. Besides being a legislated requirement, the no-blame philosophy extends to the way we directly cooperate with anyone involved in an occurrence.

Our goal is to understand whether the system of safety itself needs to be changed to improve safety.

Martin Dolan
Chief Commissioner

24 Hours
1800 020 616

Web
www.atsb.gov.au

Twitter
[@ATSBinfo](https://twitter.com/ATSBinfo)

Email
atsbinfo@atsb.gov.au

Helicopter pilots warned of risk

Robinson R22 helicopter pilots are being urged to regularly check and maintain their aircraft's drive system following a fatal accident in North-West Queensland.

While mustering near Julia Creek on 9 May 2011, a Robinson R22 helicopter was flying close to the ground when it lost drive to the rotor system. This resulted in a high rate of descent before the helicopter hit the ground. The pilot, the only occupant of the helicopter, died in the accident.

The ATSB found that two v-belts that transfer torque from the engine to the rotor system had failed. The damage to the forward v-belt indicated that it had partially dislodged from the drive sheave, resulting in significant damage to the belt. At some point, the v-belt fragmented, compromising the redundancy of the belt-drive system. Once the rear v-belt failed, all drive to the rotors was lost.

As a result of the drive failure the pilot needed to make an autorotative landing from a low altitude and at minimal speed. Autorotation is a descent with power off—the helicopter's rotor system continues to rotate at about normal RPM as a result of the air flowing upwards through the main rotor system. There was limited time for the pilot to recognise the condition and respond accordingly, and for the autorotation to develop. This resulted in a high rate of descent at impact.

This accident highlights the need for R22 helicopter operators to pay careful attention to the installation, maintenance and inspection of drive belts and other components of the helicopter's drive system.

The accident also highlights the importance of pilot proficiency in autorotations during emergency situations. When performing autorotations, there are a number of factors that must be considered in planning and execution to achieve a successful outcome. The ATSB Research and Analysis Report into Helicopter Accidents 1969–88 includes useful information on the risks associated with autorotations. ■

The investigation report AO-2011-060 is available on the ATSB website.

Fatal aircraft accident at Canley Vale

On 15 June 2010, a Piper PA-31P-350 Mojave, with a pilot and a flight nurse on board, was flying from Bankstown Airport, NSW to Archerfield Airport in Queensland. Twelve minutes after taking off, the pilot reported to Air Traffic Control that he was turning the aircraft around as he was having 'a few problems.' He shut one engine down due to an unspecified 'engine issue.'

At about 0806 Eastern Standard Time, the aircraft collided with a powerline support pole at Canley Vale. Both occupants died in the accident and the aircraft was destroyed by the impact forces and an intense post-impact fire.

The ATSB commenced an in-depth investigation immediately. The investigators constructed a detailed chronology, using information from recordings of radio communication between the pilot and ATC, recordings of radar data, ATC documentation, meteorological data and post-accident witness interviews.



Wreckage of the Piper Mojave at Canley Vale, NSW

The fact that the pilot had not given much detail about the nature of the problems he was experiencing created a challenge for the investigation. Examination of the engines, propellers and governors and other aircraft components found no evidence of any pre-impact faults. In order to understand the engine performance during the occurrence, the ATSB conducted a spectral analysis of the pilot's radio transmissions. The changes in frequencies of signals from the aircraft's propellers and alternators throughout the transmissions gave valuable indications

about the operation of the engines. The investigators discovered that when the pilot reported to ATC that he was turning the aircraft around, there had been surging of an engine which was consistent with uneven fuel distribution to the cylinders.

It was found that following the shutdown of the right engine the aircraft's airspeed and rate of descent were not optimised for flight

with one inoperative engine. In addition, the spectral analysis indicated it was unlikely that the left engine was being operated at maximum continuous power as the aircraft descended. As a result, the aircraft descended to a low altitude over a suburban area and the pilot was then unable to maintain level flight, which led to the collision with terrain.

The Civil Aviation Safety Authority has since started a project to amend advisory material relating to multi-engine aircraft training and operations to include guidance information about engine problems encountered during the climb and cruise phases of flight. This amended guidance material will include information about aircraft handling, engine management, and decision-making during these phases of flight. ■

The investigation report, AO-2010-043, is available on the ATSB website.

Important safety messages for pilots when flying twin-engined aircraft with one engine shut down:

- The optimal speed must be flown and the maximum continuous power selected on the operative engine to achieve the aircraft's published one engine inoperative performance.
- It is important to verify the aircraft's performance before conducting a descent.
- Pilots should use the appropriate PAN or MAYDAY phraseology when advising Air Traffic Control (ATC) of non-normal or emergency situations.

Investigation briefs

Broadcast and actively listen

Investigation AO-2012-102

Two aircraft proximity events at Ballarat Airport on the same day have reinforced how it is critical for pilots to broadcast and actively listen to the Common Traffic Advisory Frequency (CTAF) and maintain a vigilant lookout at all times to enhance traffic and situation awareness. This is particularly important in a high-traffic-density environment.

Both incidents on 4 August 2012 involved two Cessna 172S aircraft on converging headings arriving at the same time at the airport. Both incidents were seen by observers on the ground. In both cases one of the two pilots involved had been unaware that the incident had occurred.

Pilots should not hesitate to call and clarify another aircraft's position and intentions.

In the first instance, the aircraft passed in close proximity with about .2 NM lateral separation and 300 feet vertical separation. In the second case, the distance reduced to 0.1 NM laterally and 100 feet vertically.

The pilots reported making CTAF calls but some differences between the pilots' and observers' recollections of events could not be reconciled. Any radio broadcasts made by the pilots could not be verified, as transmissions at Ballarat are not recorded. Ballarat airport experienced a reasonable amount of airport activity on that day.

ATSB reminds pilots that in accordance with Civil Aviation Advisory Publication 166-1 '...radio broadcasts should be made as necessary to avoid the risk of a collision or an airprox. event. A pilot should not hesitate to call and clarify the other aircraft's position and intentions if there is any uncertainty.' ■

Prepare for the worst

Investigation AO-2012-084

The ATSB is highlighting the importance of carrying personal communication equipment and taking extreme care when refuelling aircraft. This comes after an accident where a helicopter was destroyed by fire and the two occupants were left without any survival gear or communications equipment.

On 19 June 2012, the helicopter, a Eurocopter AS-350BA, was 15 minutes into a flight from Ceduna to Border Village, South Australia when the pilot and passenger smelt fumes in the cockpit. Shortly after smelling the fumes, the pilot conducted an emergency landing in a remote area about 50 km west of Ceduna. Once on the ground, the passenger exited the helicopter and noticed smoke and fire coming from the rear cargo compartment. The pilot and passenger escaped without injury.

The helicopter was fitted with an Emergency Locator Transmitter which could have transmitted their position to Search and Rescue. However, it did not activate and was destroyed in the fire. Neither the pilot nor the passenger was carrying a satellite phone or a personal emergency radio beacon (EPIRB). Fortunately, they were rescued several hours later.

The investigation could not determine the cause of the fire but an earlier spillage during refuelling may have provided an initial fuel source for the fire. The operator has since ensured that all operations will have access to the appropriate equipment, and has amended the survival procedures for carrying large containers of fuel.

This accident also highlights the importance of making decisions to reduce the level of risk to the safety of the aircraft and its occupants in emergency or abnormal situations.

In this case the pilot elected early to conduct a precautionary landing and investigated the source of the fumes. ■

Wrong lever results in runway accident

Investigation AO-2012-110

The inadvertent retraction of an Aero Commander's landing gear on the runway shows the ease with which habitual piloting actions can result in an error.

The operation of the gear level and safe pin at the same time had become an automatic action, reducing the effectiveness of the safe pin as a countermeasure.

The Aero Commander 500S departed Charleville Airport, Queensland, bound for Brisbane airport via Toowoomba on a freight charter flight. About 300 meters into the landing roll at Toowoomba airport, the pilot inadvertently retracted the landing gear while attempting to retract the aircraft's wing flaps. This resulted in the main gear collapsing and the aircraft sliding for a short distance before coming to rest on the runway. The pilot, the only person on board was not injured.

A manual 'safe' pin had been incorporated as a design feature to prevent inadvertent retraction of the landing gear. However, the pilot's operation of the gear level and safe pin at the same time had become an automatic action, reducing the effectiveness of the safe pin as a countermeasure.

As a result of this accident, the operator has taken a number of safety actions, including modifying the landing gear control, and implementing random flight checks by check and training captains. In addition, the ATSB is encouraging pilots to take the time to identify any control lever positively before they action it. ■

First defence against errors and omissions

Investigation AO-2012-112

The ATSB is cautioning pilots to be diligent in the performance of checklist items during all stages of flight. This reminder comes following an incident in which a Piper Seneca experienced fuel starvation while cruising at 9,000 feet above mean sea level (AMSL).

The aircraft had departed Hobart Airport for Bankstown on a private flight. When the aircraft was about 19 km south of Nowra, the pilot (who was the only person on board) heard a bang and the left engine stopped with the right engine stopping shortly after. The pilot immediately feathered the propellers, declared a PAN and started looking for a suitable area to land. He proceeded through the memory items on the emergency checklist. While performing the emergency checklist, the pilot discovered that the right fuel selector was in the cross-feed position and the left fuel tank had run out of fuel. He repositioned the fuel selectors and restarted both engines.

At the time of the engine restart, the aircraft had descended to 4,000 feet AMSL. The pilot advised air traffic control that both engines were now running and that he would continue to Bankstown as planned.

On landing, the aircraft had a significant lateral fuel imbalance, as the left wing tank was empty and the right wing tank was almost full. As a result, the aircraft departed the runway during the landing roll. The pilot regained control and the aircraft taxied to the parking area without further incident. The aircraft was not damaged and the pilot was not injured.

The pilot had been accustomed to being assisted on flights by his wife, who would hold the checklist and read out the items. On this flight, however, she was not with him. Checklists are the most readily available means of risk management against errors and omissions. ■

Inspect and maintain fuel cap seals

Investigation AO-2012-125

On 22 September 2012, a Piper PA-32 was being operated on a private scenic flight near Yea, Victoria. About five minutes after departing, at about 1,000 feet above ground level, the pilot changed the fuel selection from the left main tank to the right tip tank. About three minutes later, at about 800 feet the engine failed. The pilot changed the fuel selector back to the left main tank and placed the fuel mixture and throttle control full forward but the engine did not respond. As a result, the pilot elected to conduct a forced landing.

The deterioration of fuel cap seals can allow the ingress of water into fuel tanks.

The pilot moved the throttle to the idle position and prepared for landing. During the landing the pilot noted that the engine power had been restored. The aircraft subsequently hit two fences and sustained substantial damage.

Subsequent inspections found water contamination in the fuel tanks. Before the flight, the aircraft had been sitting idle for several months, fully fuelled, in a hangar. The pilot reported that he had washed the aircraft several months earlier and speculated that water may have entered the tank through the fuel cap.

The deterioration of fuel cap seals can allow the ingress of water into fuel tanks. CASA Airworthiness Bulletin (AWB 28-008) Water contamination of fuel because of failure of fuel filler cap contains information on inspecting fuel filler and caps and conducting pre-flight inspections of fuel filler/caps and fuel samples. ■

Depressurisation warnings

Investigation AO-2012-127

The ATSB urges pilots to acquaint themselves with the warning signs of a pressurisation systems failure, and to maintain a high level of vigilance, following a depressurisation event involving a Metro 3 in September 2012.

The depressurisation occurred during a scheduled passenger flight from Narrabri to Sydney. On board were seven passengers and two flight crew. During the climb, the Captain noted that he was not feeling well and that he was not as accurate as usual; the First Officer (FO) reported that he felt fine at that time.

The Captain noted that the FO was taking longer than usual to reply to his request for a check of the cabin altitude, when the cabin altitude warning light illuminated. There was no audible pressurisation alert fitted to the aircraft nor was there required to be. The crew donned oxygen masks and descended the aircraft to 10,000 ft. They elected to continue to Sydney with the cabin unpressurised.

The cabin altitude warning switch was later found to be out of tolerance and was replaced. At the time of the incident, there was no routine maintenance regime for the cabin altitude warning system. The operator, Brindabella Airlines, has amended their cabin procedures and maintenance system, and is exploring alterations to their simulator training.

People on board an aircraft that experiences a loss of pressure when flying above 10,000 ft will experience the effects of hypoxia—a condition where the body is starved of enough oxygen to function normally and, if left unchecked, can ultimately lead to death. Symptoms can include those experienced by the Captain. An earlier ATSB study has shown that there is a high chance of surviving a pressurisation system failure, provided that the failure is recognised and the corresponding emergency procedures are carried out expeditiously.

The investigation report AO-2012-127 contains useful resources for those wishing to learn more about hypoxia, and how to protect themselves from it. ■

Thunderstorms add stress

The fatal in-flight breakup of a Cessna 210 highlights the danger that thunderstorms can pose to aircraft, and the importance of leaving information about your plans with a responsible person.

The accident occurred on 7 December 2011 during a private flight from Roma to Dysart in Queensland conducted under visual flight rules. Before departing, the pilot (the only person on board) logged onto the National Aeronautical Information Processing System to access weather information. Although he entered basic flight details to obtain route-specific information, he did not nominate a SARTIME (time at which, if no contact had been made, Search and Rescue should be activated) or leave a Flight Note with a responsible person. (There was no formal requirement to lodge a SARTIME or a Flight Note, but pilots are regularly urged to do so.)

The aircraft did not arrive at Dysart as expected, and the Rescue Coordination Centre was advised at 0750 the next morning. Wreckage was not found until more than 24 hours after the pilot had departed. The pilot died in the accident.

From interrupted engine data recording, the ATSB established that about 30 minutes into the flight, the outer sections of the wings and part of the



Wreckage of the Cessna 210, 100 km NNW Roma, Queensland

tail separated. The aircraft had been structurally sound before the separation and no aircraft system defects were identified. The investigation found that thunderstorms had been recorded in the area, and cruise power setting had been maintained until an onboard engine monitoring system ceased recording.

Although the precise circumstances leading to the accident were not known, a combination of aircraft airspeed with the effects of turbulence and/or control inputs generated stresses that exceeded the design limits of the

aircraft structure. Thunderstorms can bring with them a number of hazards to aviation, including severe turbulence and wind gusts.

Airspeed is a critical factor in the stress sustained by an aircraft. Pilots need to be aware of the manoeuvring speed for the aircraft weight, and to control the airspeed so as not to exceed that value when full control deflection is required or severe turbulence or wind gust are encountered. ■

The investigation report AO-2011-160 is available on the ATSB website.

Keeping an eye on safety

SafetyWatch

AVIATION | MARINE | RAIL

www.atsb.gov.au/safetywatch



Australia's voluntary confidential aviation reporting scheme

REPCON allows any person who has an aviation safety concern to report it to the ATSB confidentially. All personal information regarding any individual (either the reporter or any person referred to in the report) remains strictly confidential, unless permission is given by the subject of the information.

The goals of the scheme are to increase awareness of safety issues and to encourage safety action by those best placed to respond to safety concerns.

Overweight operators

The reporter expressed a safety concern regarding the disregard for safety within the operator's management. The reporter stated that a culture of overloading the aircraft has been encouraged by management.

The reporter states that this can be shown during regular flights from the company's home base to mining operations. The operator uses standard passenger weights and baggage weights for flight planning these flights. These passengers are normally members of mining drill crews and would on average weigh approximately 100 kgs and they generally take baggage well in excess of the nominated 10 kgs.

Named party response:

The opening statement of this report states; "overloading the aircraft has been encouraged by management"

As discussed, recently an employee (pilot) was caught knowingly overloading a company aircraft and was issued a written warning. Following this, we received a letter from the employee's lawyer demanding the written warning be withdrawn. As a consequence of this, the employee, by way of his failure to acknowledge any wrongdoing and demonstrating his inability to learn from his mistakes, has had his employment with our company terminated.

This single occurrence alone demonstrates that our management does not tolerate, nor encourage the operation of the company's aircraft outside of their design limits. All allegations suggesting otherwise are totally refuted.

In response to the second statement; on commencement of our aviation operations, with guidance from Civil Aviation Advisory Publication 235-1 *Standard Baggage and Passenger Weights*, we adopted 86kg per passenger as a standard weight as our aircraft fall into the range of 10-14 passengers. This has worked well and is a good representation of the average weight of our employees and due to the nature of our operation where we are moving upwards of 250 employees a week into and out of remote worksites,

using an Australian standard weight has been a practical and efficient way for pilots to accurately access their aircrafts payload. If the ATSB/CASA requires so, we would have no opposition to individually weighing our 650+ field workers to establish a company standard weight.

We have a 10 kg per person baggage allowance which every employee is made aware of throughout the company inductions process. The pilot of a company aircraft reserves the right to turn away any baggage that exceeds the 10 kg limit.

Company freight is processed by our stores area and is marked with its weight, description of goods, the manager who approved it to be transported, the contact number and name of the person who is to receive it at its destination.

These simple methods of establishing payload of our aircraft have been developed over the past 7½ years of operation. They are simple, easy to apply and help eliminate human error that may be associated with the calculation of an aircraft's weight limitations.

Should the ATSB/CASA have any input on how our current process could be improved any feedback would be appreciated.

CASA response:

CASA has undertaken surveillance of the operator. Three ramp checks have been conducted and any matters of concern have been addressed. CASA will continue to monitor operations.

Maintenance documentation

The reporter expressed safety concerns about maintenance documentation, particularly as it relates to a Minimum Equipment List (MEL). The reporter is concerned that a pilot may miss an expiry date for a MEL due to the large number of items that they have to sort through on board and in consequence, may inadvertently fly an aircraft which does not comply with the approved MEL.

The reporter suggests that items that are to be fixed should be removed from the tech log

and put into a work pack for the aircraft when it is next due for heavy maintenance to reduce the number of MEL items.

Operator response:

The operator's Maintenance Control department has recently made a series of changes to its management system including MEL management to ensure the quantity of MELs and defects is reduced and sustained at acceptable levels and to avoid any MEL overruns.

These changes include:

1. The introduction of a Daily Compliance Review Meeting to monitor defects and MELs, ensuring appropriate management action is taken with identified problems.
2. Benchmarking with industry to ensure MELs are reduced to best practice levels and the establishment of performance targets based on IATA data.
3. The introducing of a process whereby all MELs have to be authorised by Maintenance Watch and therefore are tracked in the Engineering and Maintenance IT platform. This enables operational oversight by Engineering management.
4. Changing operational policy to ensure aircraft do not get released to service each morning until all overnight documentation is received and reviewed by Planning, greatly enhancing operational oversight by management.

CASA response:

CASA notes the operator's response to the reported concerns. CASA has conducted operational surveillance at the operator's Maintenance Control office to observe outcomes of their recent restructure of the section and in light of the operator's response contained within this Repcon.

CASA is of the view that the newly created positions, daily compliance meeting, and benchmarking with industry will support the organisation's Minimum Equipment List being reduced to best practice levels. ■



How can I report to REPCON?

Online:

www.atbs.gov.au/voluntary.aspx

Telephone: 1800 020 505

Email: repcon@atsb.gov.au

Mail: Freepost 600

PO Box 600, Civic Square ACT 2608