



Australian Government

Australian Transport Safety Bureau

Engine failure involving a Cessna 182R, VH-OWZ

Kununurra Airport, Western Australia, 22 January 2013

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Addendum

| Page | Change | Date |
|------|--------|------|
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Engine failure involving a Cessna 182R, VH-OWZ

What happened

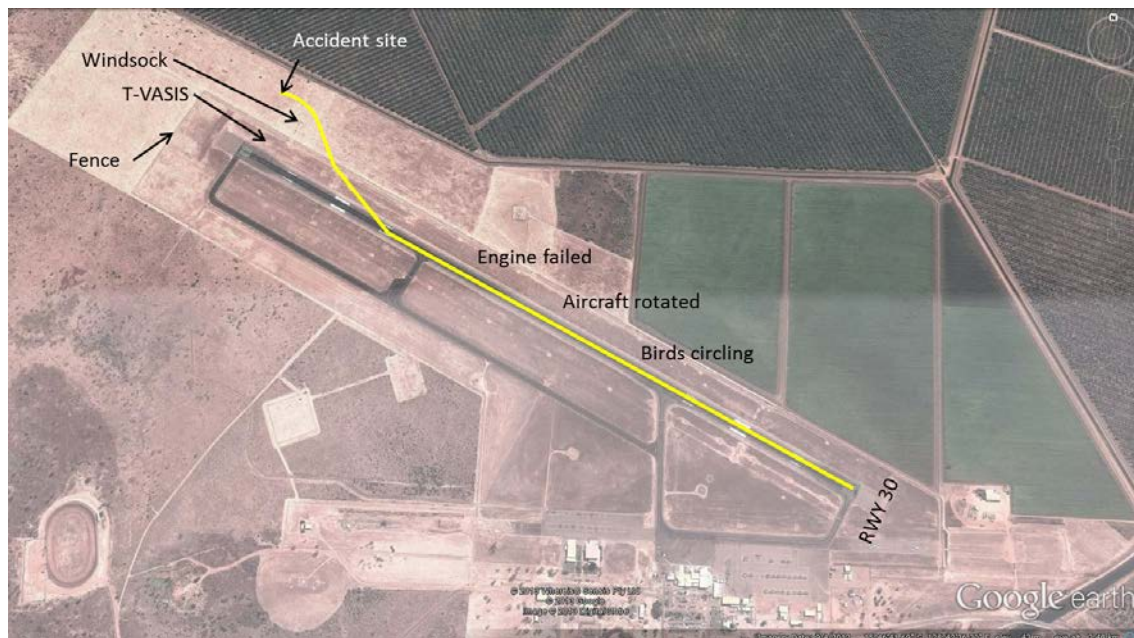
On 22 January 2013, the pilot of a Cessna 182R aircraft, registered VH-OWZ (OWZ), was preparing to depart Kununurra Airport, Western Australia on a charter flight with one passenger. As the aircraft had been located on the flight line, had not been flown for 6 weeks and there had been heavy rain over the preceding days, the pilot conducted a thorough pre-flight inspection, with no irregularities found.

After briefing the passenger, the aircraft was taxied to runway 30, with the engine performing as expected. During the takeoff, the pilot delayed the rotation¹ to remain clear of birds observed circling overhead the runway. The pilot reported that the aircraft and engine indications were normal and OWZ rotated about half way along the runway.

When at about 100 ft above ground level, with insufficient runway distance remaining to abort the take-off, the pilot retracted the landing gear. Immediately after, the engine abruptly failed. Witnesses on the ground reported hearing a bang and the engine splutter.

Due to the low altitude, the pilot confirmed that the engine controls were in the full forward position and that the fuel tank selector was on 'both'. The pilot then looked for a suitable place to land. The pilot observed obstructions at the end of the runway; a drainage ditch, a fence, the T-VASIS,² and the windsock, but saw a suitable field to the north (Figure1).

Figure 1: Aircraft track



Source: Google Earth

Accident site



Source: Aircraft operator

¹ Positive, nose-up, rotation of an aircraft about the lateral (pitch) axis immediately before becoming airborne.

² A 'T' shaped Visual Approach Slope Indicating System that uses high intensity lighting to assist pilots identify the correct glidepath to the runway.

The pilot then selected the auxiliary fuel pump on, but the engine did not respond. He lowered the landing gear and extended full flaps. The main landing gear touched down in long grass and the aircraft decelerated rapidly. When the nose gear touched down, it dug into boggy ground and the aircraft flipped over, coming to rest inverted (Figure 2). The pilot and passenger received minor injuries and the aircraft sustained substantial damage.

Figure 2: Aircraft at the accident site



Source: Aircraft operator

Pre-flight preparations

The pilot reported that his pre-flight preparations included the following:

- conducting fuel drains from both wings and the fuel strainer, with no contaminants observed (including water)
- refuelling the aircraft with 120-130 L of fuel, resulting in a total of 280 L on board
- completing engine run-ups³ at 1,700, 2,000 and 2,200 revolutions per minute (RPM), with all indications reported as normal
- conducting a second fuel drain, with no contaminants found

The pilot also conducted a self-briefing prior to takeoff, which ensured that the emergency procedures were at the 'front of his mind'.

Weather

At the time of the takeoff, the temperature was reported to be 35.9°C with a relative humidity of 41%.

Aircraft information

Prior to the flight, the aircraft had 6,929.5 hours total time in service. The aircraft was powered by a Lycoming O-540-J3C5D engine, which had 236.8 flight hours since overhaul. The last 100-hourly inspection had been carried out on 30 August 2012 at 6,888.2 hours and there were no outstanding items on the maintenance release.

Post-accident examination

An examination of the aircraft was carried out by an independent Licensed Aircraft Maintenance Engineer (LAME). No contaminants, including water, were found in the fuel or filters. The

³ To test a piston engine briefly at high power and to check dual ignition, before takeoff.

magnetos, engine driven fuel pump, throttle and mixture controls, and carburettor were examined with no problems found. The operator rotated the engine by hand and it was reported to rotate freely.

An engine tear down was not performed and the reason for the engine failure could not be determined.

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Aircraft operator

As a result of this occurrence, the aircraft operator has advised the ATSB that they are taking the following safety actions:

- *Fuel contamination procedures:* They will create a log for all company aircraft that will contain details of any water contamination found in fuel drains. In addition, after heavy rain is experienced, all aircraft fuel tanks will be tested for water contamination.
- *Emergency response equipment:* Equipping a vehicle with an 'accident kit', which includes fire extinguishers, a fire suit, and first aid kit for use in an on-airport emergency.

Safety message

This accident highlights the benefits of conducting a self-briefing before takeoff and ensuring that emergency procedures, particularly those related to critical phases of flight, are clear and familiar. This assists pilots with responding to an abnormal or emergency situation promptly and ensuring the best possible outcome can be achieved. Generally speaking, if you self-brief your plan of action just before flight, you have more chance of 'staying ahead' of the aircraft and being able to concentrate on flying.

General details

| | | |
|--------------------------|--------------------------------------|--------------------------|
| Manufacturer and model: | Cessna Aircraft Company 182R | |
| Registration: | VH-OWZ | |
| Type of operation: | Charter - passenger | |
| Occurrence category: | Accident | |
| Primary occurrence type: | Total power loss | |
| Location: | Kununurra Airport, Western Australia | |
| | Latitude: 15° 46.68' S | Longitude: 128° 42.45' E |
| Persons on board: | Crew – 1 | Passengers – 1 |
| Injuries: | Crew – 1 (Minor) | Passengers – 1 (Minor) |
| Damage: | Substantial | |

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The Bureau is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences;

safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

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 of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.