



Australian Government

Australian Transport Safety Bureau

Engine malfunction and collision with terrain involving Piper PA-23, VH-BIQ

near Mareeba, Queensland, 5 March 2016

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Published by: Australian Transport Safety Bureau
Postal address: PO Box 967, Civic Square ACT 2608
Office: 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
Telephone: 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6247 3117, from overseas +61 2 6247 3117
Email: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

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Addendum

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Engine malfunction and collision with terrain involving Piper PA-23, VH-BIQ

What happened

The owner and maintainer of a Piper PA-23 aeroplane, registered VH-BIQ, who was also a pilot, had received a special flight permit (from a person authorised by the Civil Aviation Safety Authority to issue such permits) to ferry the aircraft from Mareeba, Queensland, to Darwin, Northern Territory, for a 100-hourly inspection.

On the morning of 5 March 2016, the pilot conducted a local flight from Mareeba Airport, to check everything was functioning normally on the aircraft, in preparation for the planned flight to Darwin. The pilot reported that the aircraft performed normally during the take-off and climb to about 2,500 ft above mean sea level (AMSL). However, witnesses reported that at least one engine was running roughly during taxi and take-off, and that the aircraft appeared to climb poorly after take-off. After departing the airport, the pilot reported performing a number of in-flight checks of the aircraft, including retracting and extending the landing gear.

At about 1200 Eastern Standard Time (EST), the aircraft was returning to the airport when the pilot observed the left engine revolutions per minute (RPM) decrease from about 2,300 RPM to 2,000 RPM, which was still above idle power. The pilot conducted a series of actions to try to rectify the power loss, including checking the fuel mixture and full range of the throttle, but the aircraft descended rapidly. As the aircraft continued to descend, the pilot set the aircraft attitude to maintain an airspeed of 70 kt, which was the nominated glide speed for the aircraft.

As the aircraft descended to about 200 ft above ground level, the pilot realised that the landing gear was extended. The pilot reduced the power to idle and conducted a forced landing. The aircraft collided with cane fields, crossed a road and collided with a tree, resulting in substantial damage (Figure 1). The pilot, who was the only occupant of the aircraft, initially exited the aircraft without injury. A small quantity of fuel in the cross-feed line ignited briefly, but the flame quickly extinguished. After assessing that there was then minimal risk of a fire, the pilot returned to the aircraft and in the process sustained a minor injury.

Pilot comments

The pilot provided the following comments:

- The temperature was 33 °C, with light rain falling, and the aerodrome was at an elevation of 1,560 ft AMSL. These conditions may have contributed to the aircraft being unable to maintain altitude even while the right engine continued to produce normal power. The pilot also elected not to feather the left propeller as the engine was still producing some power. The extended landing gear created substantial drag and further reduced the aircraft's ability to maintain altitude.
- Some debris may have been present in the fuel that blocked the injectors, resulting in partial loss of power. It was possible that fuel had dried out in the distributor valve, creating a gum, which was then loosened and picked up in the fuel.

Figure 1: Accident site showing damage to VH-BIQ



Source: Aircraft owner

Safety message

The partial or complete failure of one engine in a light twin-engine aircraft can present a number of issues for a pilot to manage. Immediate actions include maintaining control of the aircraft, while assessing the aircraft's ability to climb or maintain altitude, and configuring the aircraft for maximum available performance.

Reducing the drag by retracting landing gear and flaps, and by feathering the propeller of the failed engine, need to be considered as they may assist in maintaining altitude, but may be extended for approach and landing.

The aircraft's ability to maintain altitude depends on the pilot's timely and correct actions, as well as factors that affect aircraft performance such as heat, high humidity and altitude. The local conditions and aircraft configuration may reduce the capability of the aircraft such that a forced landing is the only option available. In this situation, good decision making such as selecting a suitable landing site as soon as possible, which way to turn and avoiding manoeuvring at low level, is essential.

Pilots need to be situationally aware at all times, and be able to impose good judgement and well developed skills to accomplish the flight objectives. Pilot actions or inactions may reduce perceived safety margins and increase the probability of adverse operational events. The CASA training resource [Safety Behaviours: Human Factors for Pilots](#) includes guidance for pilots in situational awareness, decision making, threat and error management and airmanship.

General details

Occurrence details

Date and time:	5 March 2016 – 1200 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	near Mareeba, Queensland	
	Latitude: 17° 03.37' S	Longitude: 145° 20.00' E

Aircraft details

Manufacturer and model:	Piper Aircraft Corporation PA-23-250	
Registration:	VH-BIQ	
Serial number:	27-7654075	
Type of operation:	Private – Test & Ferry	
Persons on board:	Crew – 1	Passengers – 0
Injuries:	Crew – 1 (Minor)	Passengers – 0
Damage to aircraft:	Substantial	

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB 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 operations involving the travelling public.

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.