



Australian Government

Australian Transport Safety Bureau

Collision with terrain involving a Beech A36, VH-PAK

near Southport Airport, Queensland, on 16 August 2015

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Aviation Occurrence Investigation
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Addendum

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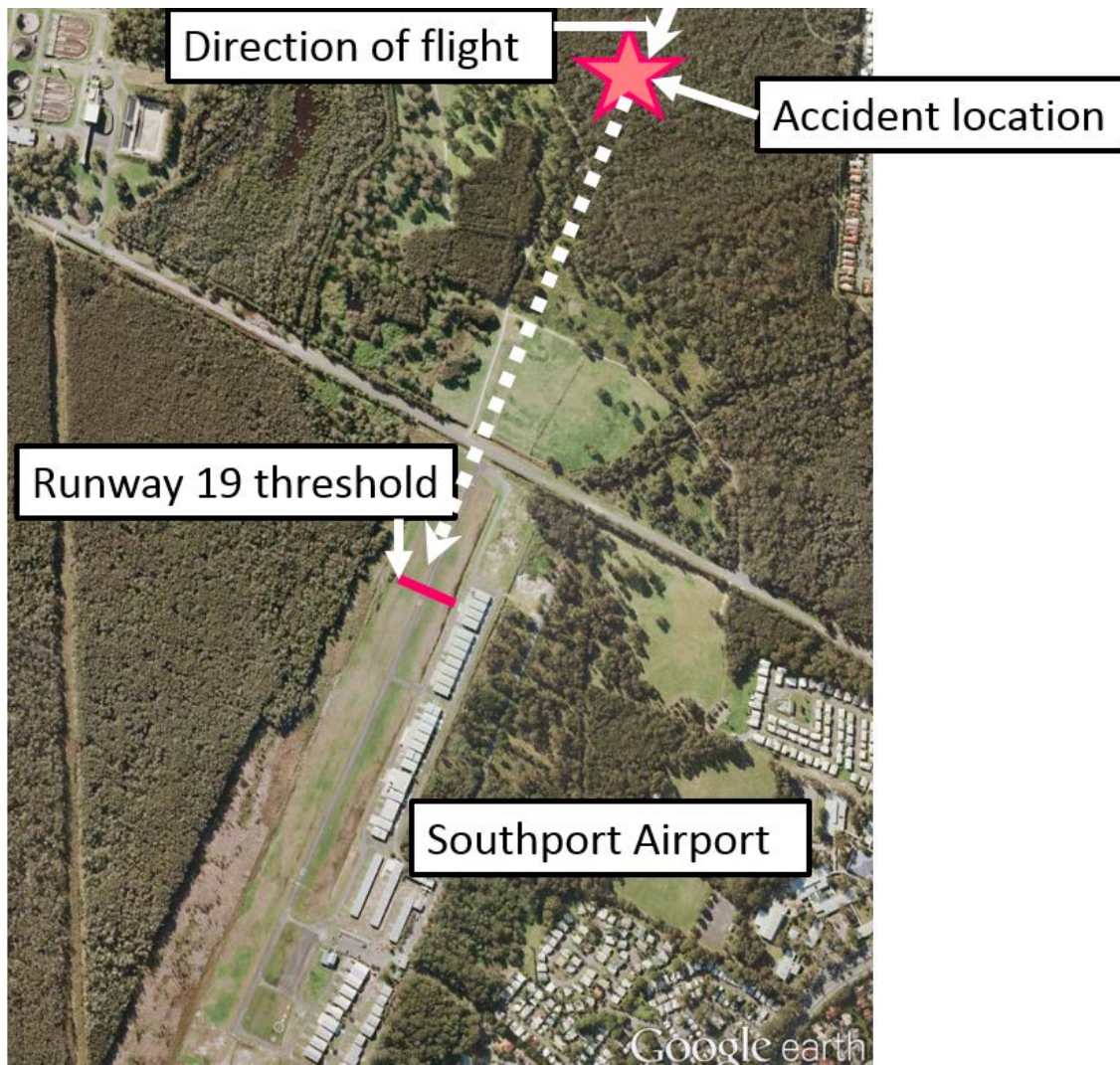
Collision with terrain involving a Beech A36, VH-PAK

What happened

On 16 August 2015, the pilot of a Beech A36 aircraft, registered VH-PAK (PAK), conducted a private flight from Pacific Haven to Southport, Queensland. The pilot reported that the aircraft engine ran normally throughout the cruise. At about 0945 Eastern Standard Time, the pilot joined the circuit at Southport Airport, with the intention to land on runway 19.

About 800 m from the runway threshold, at about 150 ft above ground level, the aircraft's engine stopped. The pilot broadcast a Mayday¹ and conducted a forced landing (Figure 1). The aircraft collided with trees, resulting in substantial damage and the pilot was not injured (Figure 2).

Figure 1: Southport Airport and accident location



Source: Google earth – annotated by the ATSB

¹ Mayday is an internationally recognised radio call for urgent assistance.

Pilot comments

The pilot provided the following comments:

- The pre-flight inspection was normal.
- Prior to the flight, there were 10 quarts of oil in the engine, with 12 quarts full oil capacity, and the aircraft operable to a minimum of 6 quarts.
- The engine had been running well during the flight.
- The pilot was ferrying the aircraft to Southport for its scheduled annual inspection.
- Due to the relatively short runway, the pilot conducted a shallow approach, to reduce the landing distance required.
- When the engine stopped, as the flaps and landing gear were extended, the aircraft sank quickly.
- The aircraft was fitted with an engine analyser (see *Engine data* section), which would generate a message to the GPS unit if a fuel tank was low on fuel. The pilot did not receive any fuel warnings.

Figure 2: VH-PAK at accident site

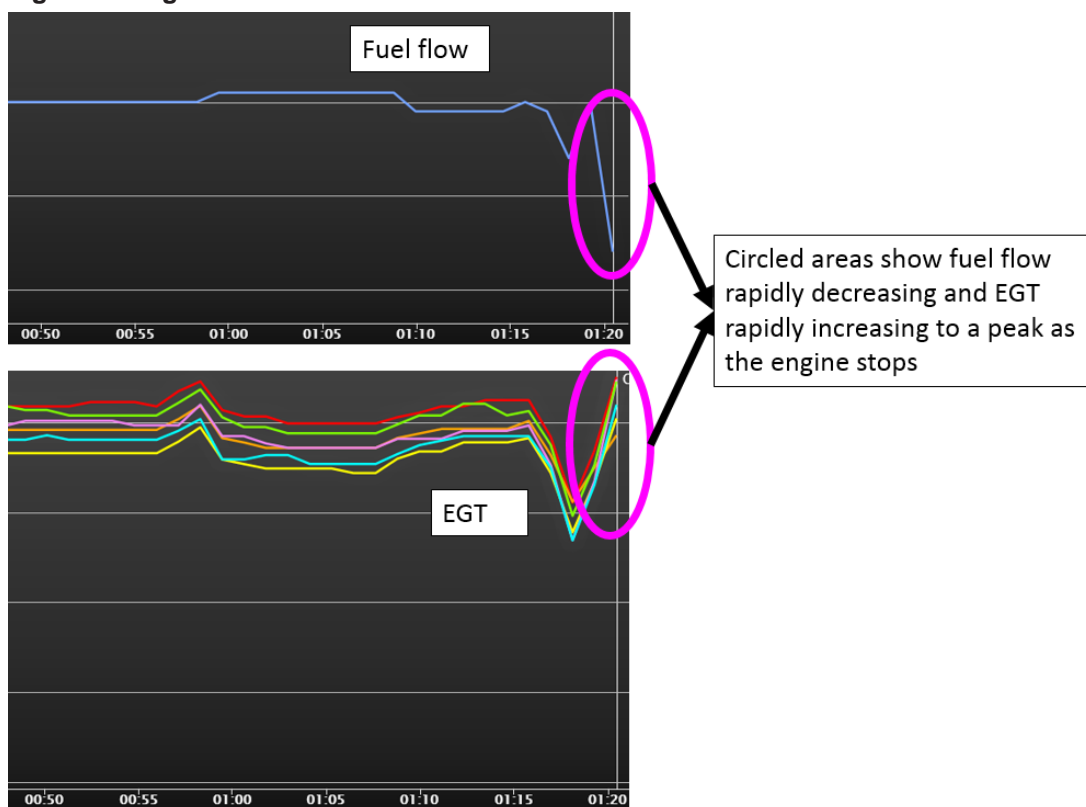


Source: Queensland Police

Engine data

The aircraft's engine data was reviewed for the flight. Figure 3 shows the recorded exhaust gas temperatures (EGT) and fuel flow for the flight. During the cruise, the fuel/air mixture was leaned to achieve a fairly constant EGT around 1,500 ° Fahrenheit (816 °C). Towards the end of the flight, as the aircraft descended, the EGT decreased. About 2 minutes before the engine stopped, the EGT climbed rapidly. The peak EGT, of about 1,552 °F (844 °C), occurred as the engine stopped (Figure 3). Simultaneously, the fuel flow dropped to zero and the engine rpm increased rapidly. This is indicative of an overly lean fuel/air mixture, and is consistent with fuel starvation.

Figure 3: Engine data



Source: Provided to the ATSB

Post-accident inspection

The engine appeared intact, with all connections also intact. There was no evidence of oil loss from the engine.

During the post-accident inspection, the engineer found that only a few drops of fuel remained in the fuel control unit. The engineer drained the right main fuel tank and airframe fuel filter bowl. Less than 2 L of fuel drained from the right fuel tank, and less than 20 ml from the fuel filter bowl. The right main fuel tank was selected in the cockpit at the time of the accident.

The tip tanks and left main fuel tank were ruptured as a result of the collision, and no fuel remained in them. However, there was no evidence of fuel contamination at the accident site, and only a slight smell of fuel.

Aircraft fuel status

The aircraft had a total fuel capacity of 432 L. It had two main fuel tanks, each capable of holding 140 L of usable fuel. The aircraft was also fitted with two wing-tip tanks, each with the capacity to carry 76 L of fuel, all of which was usable.

The pilot provided a fuel receipt, which showed 389 L of fuel had been purchased on 1 July 2015 at Bundaberg. There was no evidence recorded on the maintenance release to show that the aircraft had been in Bundaberg that day. The pilot had recorded four flights from that date, including the incident flight, totalling 3 hours and 55 minutes flight time with four take-offs and three landings (not including the accident).

The pilot reported that the fuel consumption rate used for planning was 60 L per hour for the cruise, and 80 L per hour for take-off and the first hour. The pilot also stated that the fuel gauges indicated that about half fuel remained at the time of the accident.

ATSB comment

The pilot reported that about half of the aircraft's fuel capacity remained at the time of the accident. However, the subsequent inspection found a total of about 2 L of fuel remained in the intact (and selected) right main fuel tank. The recovered engine data indicated that fuel starvation occurred at the time the engine stopped. The ATSB could not resolve the difference between the pilot's account and the fuel state found after the accident.

Safety message

The pilot commented that if the aircraft had been higher on final approach, it would have been able to glide to the runway.

The ATSB research publication [Starved and exhausted: Fuel management aviation accidents](#), states that accurate fuel management starts with knowing exactly how much fuel is on board at the commencement of each flight. It also relies on a method of knowing how much fuel the aircraft consumes. The likelihood of fuel starvation is reduced by adhering to procedures, maintaining a record of the fuel tank selections during flight and ensuring appropriate tank selections, particularly for take-off and landing.

General details

Occurrence details

Date and time:	16 August 2015 – 0945 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	Near Southport Airport, Queensland	
	Latitude: 27° 55.30' S	Longitude: 153° 22.28' E

Aircraft details

Manufacturer and model:	Beech Aircraft Corporation A36	
Registration:	VH-PAK	
Serial number:	E-1060	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	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 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.