



Australian Government

Australian Transport Safety Bureau

Low fuel and precautionary landing involving Cessna 172H, VH-WKB

30 km N of Broome Airport, Western Australia, 1 August 2016

ATSB Transport Safety Report
Aviation Occurrence Investigation
AO-2016-087
Final – 14 October 2016

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Publishing information

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Addendum

Page	Change	Date

Low fuel and precautionary landing involving Cessna 172, VH-WKB

What happened

On 1 August 2016, at about 0830 Western Standard Time (WST), a Cessna 172 aircraft, registered VH-WKB (WKB), departed from Cape Leveque Aircraft Landing Area (ALA), Western Australia (WA). The pilot (owner) and one passenger were on board the private flight.

Prior to departure, the pilot had checked the amount of fuel in the aircraft's fuel tanks with a dipstick and estimated there was about 50 litres of fuel remaining. The pilot planned a one hour coastal sightseeing flight to Broome, using a five knot headwind component, at a fuel flow of 35 litres per hour.

Shortly after departure, the pilot noted the headwind component had increased from five knots to about 25 knots. About 45 minutes into the flight, the fuel gauges were indicating lower than the pilot had anticipated, so they initiated a climb to a higher altitude in an attempt to improve their flight range. About one hour and five minutes into the flight, the pilot heard the engine make a 'bit of a cough' and noticed the fuel gauges were indicating empty. Considering that their direct track to Broome Airport would require them to fly over water and a residential area, the pilot elected to conduct a precautionary landing.

The pilot identified a clear section of straight road ahead, broadcast a MAYDAY¹ call and landed the aircraft on the Manari road, about 30 kilometres north of Broome airport (Figure 1). The aircraft had been flying for about one hour and 10 minutes. There were no injuries and the aircraft was not damaged.

Following the landing, the pilot confirmed with Broome Air Traffic Control that they landed safely and cancelled their MAYDAY. Aviation fuel was transported by road, to where WKB had landed and it was refuelled. Two vehicles blocked a section of the road to allow WKB to depart for Broome and the aircraft landed at Broome without further incident.

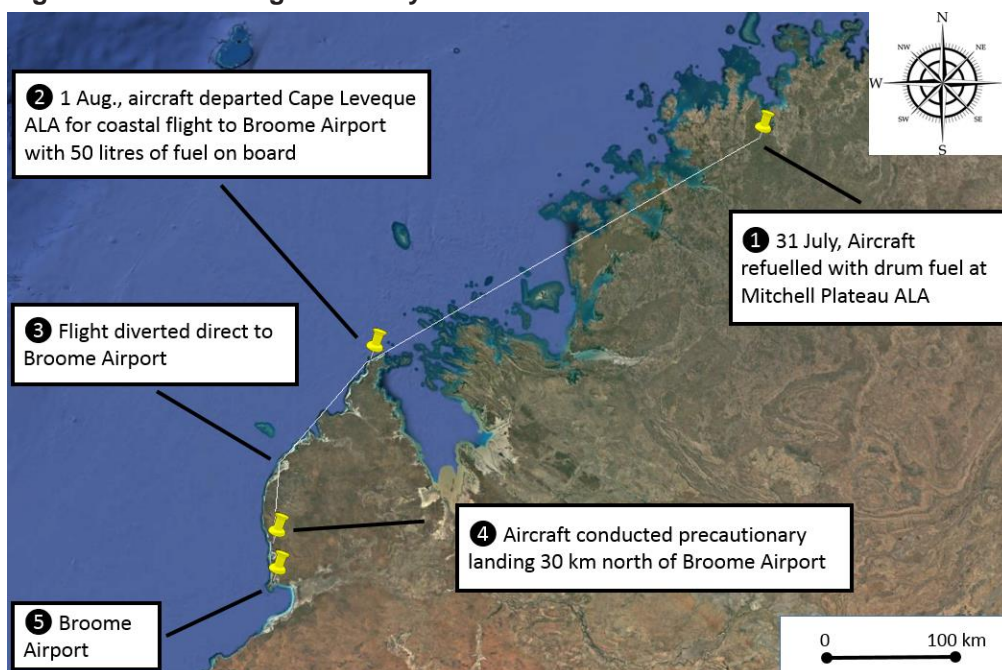
Weather planning

The pilot checked the area forecast and the Broome airport aerodrome forecast (TAF)² before departure and elected to use the TAF wind of five knots because they planned to fly at about 500 feet. On arrival at Broome Airport, the pilot noted the wind speed on the Broome TAF had increased to 24 knots with gusts to 38 knots.

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

² Aerodrome Forecasts are a statement of meteorological conditions expected for a specific period of time, in the airspace within a radius of 5 NM (9 km) of the aerodrome.

Figure 1: VH-WBK flight with key events



Source: Google earth, annotated by ATSB

Fuel consumption

In March 2015, the pilot flew the aircraft from Moorabbin Airport, Victoria, to Kununurra Airport, WA, and calculated the average fuel flow was 32 litres per hour. In June 2016, a periodic inspection was conducted, which included a calibration check of the fuel gauges and dipstick.

The day prior to the incident flight, the pilot flew the aircraft to Mitchell Plateau ALA, where it was refuelled with aviation fuel from a drum, and then onward to Cape Leveque (Figure 1). The use of fuel from a drum at Mitchell Plateau precluded an accurate fuel flow check by the pilot and there was no fuel stock available at Cape Leveque during their overnight stay.

Subsequent to the incident flight the pilot calculated the fuel flow had increased from 32 litres per hour to 37 litres per hour.

Safety message

This serious incident highlights how several factors, which on their own were not critical, combined on the day to result in a critical situation for the pilot. The fixed fuel reserve on board at the time of departure was less than the recommended 45 minutes for piston engine aircraft flights, as published in [Civil Aviation Advisory Publication 234-1\(1\) – Guidelines for aircraft fuel requirements](#). Shortly after departure the headwind component increased and unknown to the pilot, the fuel consumption was greater than planned.

The pilot commented that they were not in a rush and probably too relaxed in their approach to the flight. Consequently, the effect of the change in wind speed on fuel reserves was not given the priority that it required. They also highlighted the importance of aircraft owners confirming fuel consumption after a periodic inspection is conducted.

General details

Occurrence details

Date and time:	1 August 2016 – 0950 WST	
Occurrence category:	Serious Incident	
Primary occurrence type:	Low fuel	
Location:	30 km north of Broome Airport, Western Australia	
	Latitude: 17° 40.92' S	Longitude: 122° 13.67' E

Aircraft details

Manufacturer and model:	Cessna Aircraft Company 172H	
Registration:	VH-WBK	
Serial number:	17256002	
Type of operation:	Private – pleasure / travel	
Persons on board:	Crew – 1	Passengers – 1
Injuries:	Crew – 0	Passengers – 0
Aircraft damage:	Nil	

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.