



Australian Government

Australian Transport Safety Bureau

Potential fuel exhaustion event involving a DHC Beaver, VH-AWI

near Shute Harbour, Queensland, on 2 August 2014

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Addendum

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Potential fuel exhaustion event involving a DHC Beaver, VH-AWI

What happened

On 2 August 2014, the pilot of a de Havilland DHC-2 (Beaver) aircraft, registered VH-AWI, prepared to conduct two return charter flights from Shute Harbour to Whitehaven Beach, Queensland as specified on the company schedule for that day (Figure 1).

Figure 1: VH-AWI



Source: Operator

The pilot calculated the fuel required based on the two return flights. The company operations manual specified that standard route times of 12 minutes from Shute Harbour to Whitehaven Beach and 13 minutes for the reciprocal flight were to be used. For planned flights of less than 30 minutes flight time, 30 minutes fixed reserve fuel was to be carried and the aircraft fuel consumption rate was 100 L per hour. The pilot calculated the two return flights of 25 minutes plus 4 minutes of taxiing for each sector and 30 minutes reserve equated to a total of 96 minutes of fuel. He then filled the rear tank which held 130 L and added fuel to the front tank to carry a total of 170 L of fuel. The pilot crosschecked his fuel calculations with another company pilot and both verified the fuel quantity required and that the total fuel endurance on board was 102 minutes.

The pilot planned to fly one group of five passengers plus a staff member to Whitehaven Beach, return solo to Shute Harbour, and take a second group of five passengers to Whitehaven Beach. The pilot would then wait at Whitehaven beach for about one hour before returning to Shute Harbour with the first group of passengers. After disembarking the passengers, the pilot would return solo to Whitehaven Beach, collect the second group of passengers and return to Shute Harbour. During the planning, the pilot had omitted to include the solo ferry flights in the fuel calculations.

During the cruise on the final flight to Whitehaven Beach, the pilot updated the fuel log and realised that he had planned for two return flights and omitted to allow additional fuel for the two empty sectors. He calculated that although he may have to use some of the reserve fuel to complete the return flight, he expected to land back at Shute Harbour with about 7 minutes of fuel remaining on board. The pilot conducted a risk assessment and elected to collect the passengers from Whitehaven Beach and return to Shute Harbour as planned.

At that time, the fuel gauge indicated the rear tank in excess of ¼ full, or with about 35 L. Prior to arriving at Whitehaven, the pilot ensured all remaining fuel in the front tank was used and then switched to the rear tank.

The pilot landed the aircraft close to the passenger pick-up point to reduce taxi time, collected the passengers for the flight and conducted a short taxi and take-off for the estimated 12 minute flight to Shute Harbour. The pilot was mindful of the low fuel status and climbed to about 1,500 ft to increase the height available if a glide approach was required.

The aircraft landed at Shute Harbour at 1708 Eastern Standard Time (EST) and the pilot and passengers disembarked. The following day, the pilot added 124 L of fuel to the rear tank, which indicated that about 6 L of fuel had been in the tank when the aircraft landed the previous day, significantly less than the required 50 L reserve.

Pilot comments

The pilot of AWI provided the following comments:

- On the solo flights he was making up time by flying on a direct route and landing close to the shoreline to reduce taxi distance.
- The fuel system at Shute Harbour was not operational and an airport staff member was required to attend when pilots were refuelling aircraft. The airport staff had left for the day and the expected time required for their attendance may have resulted in the passengers not being collected prior to last light and therefore being stranded overnight at Whitehaven Beach.
- As the entire flight was conducted over water in a seaplane, he had the option to land at any stage if required.
- The front fuel tank gauge did not provide an accurate indication of fuel quantity.
- There was no means to 'dip' the rear fuel tank or externally verify the fuel quantity remaining.
- The first flight was scheduled to depart at 1230 but was delayed about one hour due to a delay earlier in the day. He was attempting to expedite the turnaround times to ensure the passengers had the allotted two hours at the beach and to return well before last light.
- Only the passenger flights were recorded on the company flight schedule, not the solo sectors. Both company pilots based calculations on two return flights not three.
- He had been distracted by organisational concerns during the fuel planning stage.

Operator comments

The operator of AWI provided the following comments:

- Last light on the day was 1810.
- Other options available for refuelling existed at Hayman and Hamilton Islands.
- As a standard procedure, company pilots carried a minimum of 130 L of fuel for a return flight to Whitehaven Beach. There was substantially less than 130 L fuel on board when the aircraft departed Shute Harbour for the third return flight to Whitehaven Beach.
- A company aircraft was at Whitehaven Beach when the pilot of AWI realised the low fuel status. The pilot of the other aircraft was not made aware of the situation and may have been able to return to retrieve the remaining passengers.
- Conducting all checks thoroughly and maintaining an accurate fuel log may assist in preventing similar incidents occurring in the future.

Safety message

This incident highlights the importance of establishing a known fuel status regularly and the impact distractions can have at critical times including during flight planning. The report *Avoidable Accidents No. 5 – Starved and exhausted: Fuel management aviation accidents*, describes

procedures that pilots can use before and during a flight to ensure they have sufficient fuel to land at their destination with reserve fuel intact. The publication is available at www.atsb.gov.au/publications/2012/avoidable-5-ar-2011-112.aspx.

General details

Occurrence details

Date and time:	2 August 2014 – 0900 EST	
Occurrence category:	Serious incident	
Primary occurrence type:	Low fuel	
Location:	Shute Harbour (ALA), Queensland	
	Latitude: 20° 16.70' S	Longitude: 148° 45.33' E

Aircraft details

Manufacturer and model:	de Havilland Canada DHC-2	
Registration:	VH-AWI	
Serial number:	298	
Type of operation:	Charter	
Persons on board:	Crew – 1	Passengers – 5
Injuries:	Crew – Nil	Passengers – Nil
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 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.