

**SERIOUS INCIDENT**

<b>Aircraft Type and Registration:</b>	Reims Cessna F152, G-BTAL	
<b>No &amp; Type of Engines:</b>	1 Lycoming O-235-L2C	
<b>Year of Manufacture:</b>	1978 (Serial no: 1444)	
<b>Date &amp; Time (UTC):</b>	25 June 2020 at 1340 hrs	
<b>Location:</b>	Shobdon Aerodrome, Herefordshire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	No damage	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	35 years	
<b>Commander's Flying Experience:</b>	83 hours (of which 64 were on type) Last 90 days - 0 hours Last 28 days - 0 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and additional enquiries made by the AAIB	

**Synopsis**

The aircraft suffered a partial engine failure shortly after takeoff from Shobdon Aerodrome. The pilot landed the aircraft in a field to the east of the aerodrome. He was not injured and there was no damage to the aircraft.

This report considers why this incident resulted in a good outcome when many previous similar events have resulted in fatal accidents.

**History of the flight**

The pilot had not flown for several months due to public health restrictions and on the day of the incident was planning to complete three circuits to regain recency. The first two circuits were uneventful. He took off for the third circuit with the flaps up and full power. As the aircraft reached 300 – 400 ft the engine lost all power. The pilot described it feeling like “someone had pulled the throttle to idle”. He immediately lowered the nose and selected a field slightly to his left. He recalled that the power returned briefly then reduced again but he decided to close the throttle and treat the engine as completely failed. He made a MAYDAY call then focused on the landing.

The pilot landed the aircraft with the flaps up in a slight crosswind. As the aircraft touched down he noticed a ditch crossing the aircraft's track and decided to pull back on the control column to pass over it. Once clear of the ditch he brought the aircraft to a halt and

shut the engine down. The aircraft was not damaged and the pilot was able to exit the aircraft normally.



**Figure 1**

Aerial view of Shobdon Aerodrome showing G-BTAL in the field to the east

The pilot reported that he had been trained to think through all possible outcomes and had considered different engine failure scenarios at the airfield prior to the event. He also always briefed himself on his actions in the event of an engine failure prior to each takeoff. He believed this helped him manage the situation on the day. He had recently completed ATPL(A)<sup>1</sup> ground exams and had read various articles and reports about managing engine failures and the potential pitfalls. These had taught him to treat a partial engine failure as a complete engine failure, not to try to turn back to the airfield, and the importance of flying the aircraft first.

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#### Footnote

<sup>1</sup> Air Transport Pilot's Licence (Aircraft).



**Figure 2**

G-BTAL ground track showing the ditch the aircraft crossed

### **Aircraft examination**

The maintenance organisation recovered the aircraft and conducted a detailed inspection. It was unable to identify the cause of the loss of power but suspected it was caused by carburettor icing. The inspections included checking the fuel filters and draining the fuel tanks. No contamination was found in the fuel filters, but a 5 - 6 inch piece of tape was found in the fuel tank. However, it was not thought that this had affected the fuel flow to the engine. It was not determined how the tape entered the tank.

The aircraft was returned to flying and at the time of writing no further engine problems had been encountered.

### **Carburettor icing**

The air temperature was 29°C with a dew point of 17°C, suggesting serious carburettor icing was likely at descent power. The pilot reported that he used the carburettor heat for at least 10 seconds whilst flying downwind and did not detect any icing. He selected the carburettor heat again before he reduced power for descent and kept it on until landing.



**Figure 3**

G-BTAL after the incident  
(tie downs were installed to secure the aircraft before recovery)

### **Managing partial power loss after takeoff**

Pilots are taught how to handle a complete engine failure, but partial engine failure is not normally covered during training. Recognising this, the Australian Transport Safety Bureau has published a safety leaflet on managing partial power loss after takeoff in single engine aircraft<sup>2</sup>. The key message in the leaflet is that most fatal and serious injury accidents can be avoided by using the following strategies:

- pre-flight decision making and planning for emergencies and abnormal situations for the particular aerodrome
- conducting a thorough pre-flight and engine ground run to reduce the risk of a partial power loss occurring
- taking positive action and maintaining aircraft control either when turning back to the aerodrome or conducting a forced landing until on the ground, while being aware of flare energy and aircraft stall speeds.

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#### **Footnote**

<sup>2</sup> 'Avoidable Accidents No. 3 - Managing partial power loss after takeoff in single-engine aircraft' available at <http://www.atsb.gov.au/publications/2010/avoidable-3-ar-2010-055/> [accessed 9 July 2020].

## Analysis

The pilot attributed the safe outcome to having planned and reviewed his actions in the event of an engine failure prior to taking off. This freed sufficient capacity such that, when the event occurred, he could focus on flying the aircraft. He also treated the partial failure as a complete failure. Having read about previous accidents he was not tempted to turn back and instead selected a field ahead and focused on landing.

The reason for the engine failure was not determined. It is possible it was caused by carburettor icing.