

ACCIDENT

Aircraft Type and Registration:	CAP 232, G-GSGZ	
No & Type of Engines:	1 Lycoming AEIO-540-L1B5 piston engine	
Year of Manufacture:	1996	
Date & Time (UTC):	2 September 2008 at 0940 hrs	
Location:	Near Llay, 3 nm South of Hawarden Airport	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Major damage to fuselage, tail and landing gear	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	56 years	
Commander's Flying Experience:	957 hours (of which 689 were on type) Last 90 days - 34 hours Last 28 days - 10 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The pilot reported that he misjudged a pre-flight visual inspection of the aircraft's fuel quantity and the engine stopped due to fuel exhaustion during flight. The ensuing forced landing resulted in the aircraft pitching forward onto its back. This trapped the pilot who required external assistance to vacate the aircraft.

History of the flight

In preparation for a local aerobatic flight, the owner of the aircraft carried out the normal pre-flight checks, including a physical check of the fuel on board. The aircraft was fitted with a centre tank and a tank in each wing, with aerobatics only permitted with the wing tanks empty. The pilot confirmed the wing tanks were empty and on checking the centre tank, could see fuel

and assessed the tank to be full. He did not use a dip stick. He estimated that there was sufficient fuel for at least half an hour's flying depending on the amount of time that aerobatics were flown.

The pilot strapped in and noted that the centre tank fuel gauge indicated 7/8ths full. This gauge is positioned in such a way that the pilot must move his leg to see it once strapped in.

After a normal start and power checks, he took off from Hawarden Airfield and flew for approximately six minutes to reach the area in which he planned to perform the aerobatics. He completed his pre-aerobatic checks which included another check of the fuel and flew a

series of aerobatic manoeuvres lasting approximately seven minutes. The last manoeuvre was a stall turn during which the engine stopped for approximately 2-3 seconds before restarting. After recovering from the stall turn and with the aircraft level, another check of the fuel revealed the centre tank gauge indicating zero. The pilot started to return to the airfield, setting economical cruise and making a PAN call to inform ATC of his fuel state.

Approximately 3 nm from the airfield the engine stopped and could not be restarted. As he was unable to glide to the airfield, the pilot conducted a forced landing in a freshly cultivated field. He reported that one reason for selecting this field was that there was a tractor working in it which might be of assistance after landing. The pilot described flying a satisfactory approach but the roll out after touchdown was rough and bouncy. As the aircraft slowed, the nose pitched down and the aircraft flipped over onto its back, partly breaking the canopy. The pilot, who was wearing a full harness, had his head forced onto his chest by the earth which made breathing difficult. The driver of the tractor witnessed the accident and was able to lift the wing of the aircraft using the plough attached to the tractor. This allowed him sufficient room to dig away the soft earth and break the remaining canopy using a hammer. The pilot undid his harness and was able to escape from under the aircraft.

Analysis

The pilot considered the engine stopped approximately 15 minutes into the flight due to fuel starvation. He was not aware of any fuel leaks and despite his initial fuel checks indicating the centre tank was nearly full, he believes he misjudged the quantity and that it was more likely to have been only half full. The pilot reported that the fuel gauge did not move in a linear fashion and was therefore not an accurate method of assessing the quantity on board. In addition, due to the position of the gauge, it was not easy to continually monitor during flight. He commented that he would now fill a tank to the top as he considered this the only way to be sure of the fuel quantity it contained.

The pilot did not routinely wear a parachute and had no option other than to carry out a forced landing. He reported that the accident had made him reconsider this and that he would now wear a parachute, only attempting a forced landing if there was a prepared surface on which to land. He believed this type of aircraft was likely to pitch forward onto its back on any other sort of surface, as on this occasion, and he considered himself lucky not to have suffocated or suffered a serious or fatal head injury. In this event, his situation would have been considerably more serious had it not been for the soft earth and the timely intervention of the tractor driver.