

ACCIDENT

Aircraft Type and Registration:	HAPI Cygnet SF-2A, G-BWFN	
No & Type of Engines:	1 HAPI 60-2DEH piston engine	
Year of Manufacture:	1995 (Serial no: PFA 182-11335)	
Date & Time (UTC):	3 July 2014 at 1214 hrs	
Location:	Near Blithfield Reservoir, Staffordshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (Minor)	Passengers - 1 (Minor)
Nature of Damage:	Damage to the propeller, cowling, landing gear, lower fuselage and right wing	
Commander's Licence:	National Private Pilot's Licence	
Commander's Age:	60 years	
Commander's Flying Experience:	454 hours (of which 171 were on type) Last 90 days - 9 hours Last 28 days - 1 hour	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

During the initial climb, following a takeoff from Runway 23, the aircraft's engine lost power. The pilot carried out a forced landing into a field but the ground conditions were rough and the aircraft's landing gear collapsed on touchdown. The two occupants both suffered some minor injuries but were able to vacate the aircraft unassisted.

History of the flight

The aircraft was based at Abbots Bromley Airfield, also known as Yeatsall Farm. The airfield elevation is 410 ft amsl, with a grass strip, 680 m in length and 22 m wide, orientated 23/05. It is situated close to Blithfield Reservoir, over which the climb-out path from Runway 23 extends.

The pilot was accompanied by a passenger for a local flight. The weather conditions reported by the pilot were fine, with no cloud below 3,000 ft, good visibility and a temperature of 27°C; the surface wind was from 250° at 8 kt.

The pilot warmed the engine up to the normal operating temperatures and pressures and carried out his usual pre-flight checks. He reported that the takeoff and initial climb were normal but, at about 450 ft aal, the engine started "popping" and there was a loss of power. The pilot lowered the nose and set the trim, checked that the fuel was on and applied carburettor heat. The aircraft was fitted with electronic ignition, with a separate isolated

back-up supply, which he selected. The running of the engine did not improve and, because of the aircraft's low height, he decided not to attempt any further troubleshooting but to concentrate on finding a field and carrying out a forced landing. The field ahead contained cattle, so he chose another field to its left.

As the aircraft descended the propeller stopped completely. The pilot noted that, although he had practised simulated engine failures previously, the aircraft felt quite different to fly when the engine had actually stopped. In particular, he noticed a lot more drag on the aircraft, the flying controls felt more "sluggish" and the aircraft responded differently, especially in the final turn to the left, without the slipstream from the propeller.

The aircraft touched down in the field at slow speed and stopped quickly, as the landing gear collapsed and the right wing contacted the ground. Both occupants were wearing full four-point harnesses and were able to escape from the aircraft without assistance, although they had suffered some minor injuries.

Discussion

After the accident, the pilot and a Light Aircraft Association (LAA) inspector carried out an investigation into the engine failure. No faults were found in either the electrical or fuel systems, so they concluded that the most likely reason for the loss of power was carburettor icing.

It is, perhaps, surprising to think that carburettor icing could occur with such warm ambient temperatures and the engine at full power. However, the 1120 hrs UTC METAR at East Midlands Airport, 20 nm to the east of Abbots Bromley, indicated a significantly lower temperature of 21°C, with a dewpoint of 14°C. So, it is possible that it was similar at Abbots Bromley. The pilot advised that he had used a temperature gauge fitted to his aircraft to note the temperature and that it may have been misleading because it had been parked in the sun.

The actual temperature and dewpoint split would suggest a moderate risk of carburettor icing at cruise power¹, although this will vary according to the engine type and installation. Other factors that may have contributed to the possibility of carburettor icing include time that was spent at idle power on the grass surface, before takeoff, and local conditions that may have increased the level of humidity in the atmosphere.

The pilot considered that the full four-point harnesses had reduced the potential for injury by restraining the upper torso, even though one strap slipped off his shoulder.

Footnote

¹ CAA Safety Sense Leaflet 14, *Piston Engine Icing*.
