

Aircraft Type and Registration:	Piper PA-15 Vagabond, G-BOVB	
No & Type of Engines:	1 Continental C85-12F piston engine	
Year of Manufacture:	1948	
Date & Time (UTC):	16 October 2004 at 1730 hrs	
Location:	Whitefield's Farm, near South Molton, Devon	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew -1 (Minor)	Passengers - 1 (Minor)
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Commercial Pilot's Licence	
Commander's Age:	35 years	
Commander's Flying Experience:	1,720 hours (of which 250 were on type) Last 90 days - 234 hours Last 28 days - 86 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

History of the flight

The pilot had landed the aircraft at the farm strip during the afternoon after an uneventful flight from South Molton Airfield. After visiting the farm house with his passenger, he prepared for a short onward flight to Eaglescott Airfield. The pilot had previously visited the field by car to assess its suitability, and checked it again by foot prior to departure. The field itself, at an elevation of 600 feet, is approximately 320 metres in length between a farm drive and a hedge, and is bounded on its northern side by trees and woodland. The available take-off direction is east-west, with a slight upslope followed by a marked downslope when taking off to the east, as the pilot intended to do. Weather reports were obtained from Exeter and Bournemouth Airports, timed at 1500 hrs. These reported a surface wind from the north-west, good visibility but with rain showers. Cloud was reported between 2,000 and 2,500 feet. The pilot estimated the surface wind at the farm to be from the north at 5 kt, and observed an isolated shower about 3 nm north of the farm. Surface temperature was estimated to be 8°C.

The pilot started the engine and taxied along the strip over grass that he described as damp in places. There was 16 kg of fuel on board at this stage, which was a mixture of AVGAS and MOGAS in an approximate ratio of 4:1. Whilst taxiing, the pilot applied carburettor heat for between 20 and 30 seconds. Power checks and take-off checks were completed with no abnormalities noted and the pilot applied carburettor heat, as required by the checklist, for approximately 10 seconds. The aircraft was not equipped with wing flaps.

The takeoff itself appeared normal initially, with a satisfactory acceleration noted as the aircraft passed 50 mph airspeed. The field was similar in length to the pilot's home strip, and he considered that take-off performance was normal. Soon after becoming airborne the pilot sensed that it was not climbing as it should. The rate of climb reduced and became a gradual rate of descent, causing the aircraft to fly parallel to the sloping field. Beyond the take-off field was a further large field and the pilot decided to carry out a forced landing into it. However, the aircraft did not clear the hedge at the end of the take-off field, striking the upper part of the hedge with its main wheels. The aircraft pitched forward and landed on its main wheels in the field beyond. The propeller struck the surface and the aircraft continued to pitch forward until it inverted, sliding for a short distance. The pilot and his passenger sustained cuts and bruises but were able to vacate the aircraft through the right hand door. Both seats had maintained integrity and the lap straps and diagonal harnesses had prevented more serious injuries. However, the fire extinguisher had detached from its mounting bracket, causing damage to the discharge nozzle which would have prevented its use.

There was no fire but fuel was seen to be leaking from the filler cap. As a precaution the pilot telephoned the fire brigade who arrived soon after, accompanied by the police and ambulance service. The aircraft sustained extensive damage in the accident and was subsequently written off.

Meteorological information

An aftercast was obtained for the Whitefields Farm area for the time of the accident. The 2,000 feet wind was from 360°(M) at 15 to 20 kt and the 1,000 feet wind was from 360°(M) at 15 kt, giving a likely surface wind from 350°(M) at 7 to 12 kt. Visibility was 20 to 30 km, reducing to 10 km in showers. There was scattered cumulous cloud at 2,000 to 2,500 feet, increasing in amount in showers. The surface temperature was 11°C and the dew point was 7°C, giving a humidity of 76%.

Analysis

The pilot provided a very full report and considered some of the possible causes. He did not recall any unusual engine noises or changes of engine note during the takeoff. Fuel contamination was unlikely as samples taken before and after the accident were clear, and the previous flight had not shown any symptoms of contamination. The pilot and passenger both recalled the airspeed check at

50 mph and, as the initial climb-out speed is 55 to 60 mph, the pilot thought it unlikely that the aircraft got airborne at a significantly slower speed. He does not recall any unusual control requirements and does not believe that the aircraft was close to the stall when it first became airborne.

The throttle control was still in the fully open position after the accident and the friction control nut was tight. The engine showed no obvious signs of an internal mechanical failure. The weight and balance of the aircraft were within prescribed limits.

The northerly wind, combined with the presence of large trees to the north of the field suggested the possibility of unusual local wind effects that may have adversely affected the aircraft's performance. However, the pilot's own estimate of the surface wind was close to the aftercast wind and although there was the possibility of a slight tailwind, the conditions were unlikely to have generated a situation that exceeded the performance capabilities of the aircraft.

The combination of temperature and dew point indicate that a *'serious'* icing risk existed at all power settings, and this risk was further increased by the damp grass. The pilot reported that the aircraft had been stationary with the engine running in an area at the side of the field which was wetter than the rest of the field, which would also have increased the risk. The use of MOGAS further increases the risk of carburettor icing due to its increased volatility and higher water content. Given the prevailing conditions, the carburettor heat application prior to takeoff may not have been sufficiently long enough to completely clear any ice that may have formed.

The pilot, and others who flew the aircraft regularly, had only infrequently encountered carburettor icing in this aircraft. However, in the absence of other evidence, the possibility that carburettor icing caused a loss of power on takeoff cannot be ruled out.