

ACCIDENT

Aircraft Type and Registration:	Slingsby T67B, G-BLTU	
No & Type of Engines:	1 Lycoming O-235-N2A piston engine	
Year of Manufacture:	1985	
Date & Time (UTC):	20 February 2006 at 1325 hrs	
Location:	13 miles north of RAF Marham, Norfolk	
Type of Flight:	Training	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to landing gear, propeller, engine and structure	
Commander's Licence:	Private Pilots Licence	
Commander's Age:	34 years	
Commander's Flying Experience:	1,430 hours (of which 68 were on type) Last 90 days - 8 hours Last 28 days - 8 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and AAIB inquiries	

Synopsis

As a result of a reduction in engine power, possibly caused by carburettor icing, the pilot was unable to maintain height and therefore made a forced landing in a recently harrowed field. During the landing roll the nose wheel dug into the soft earth causing the nose leg to break and the aircraft to nose over coming to rest inverted.

History of the flight

The pilot departed from RAF Wyton on a three hour navigation exercise around the south-east of England and was receiving a Flight Information Service from Marham on 124.15 MHz. Approximately 45 minutes into the flight, and whilst flying straight and level at approximately 1,100 ft, the pilot noticed a reduction

in the engine rpm from the cruise setting of 2,300 rpm. As the pilot was checking that he had not inadvertently knocked the throttle lever, the engine rpm decayed towards 2,100 rpm. The pilot selected the electrical fuel pump ON and confirmed that the fuel pressure was in the green (normal) zone. However, the engine rpm continued to decrease so the pilot contacted Marham and informed them that he had a rough running engine and requested a heading to Marham, which was 18 nm away. At this stage the pilot stated that the throttle was fully forward, the mixture was fully rich and he believes that he set the carburettor heat to ON. During the turn towards Marham the engine rpm decreased to around 1,700 rpm and the height reduced to 800 ft. The pilot

realised that he could not maintain height and made a distress call on 124.15 MHz, which was acknowledged by Marham. The pilot stated that a landing into wind would have entailed descending towards trees which he was not sure he would clear and, therefore, he elected to land in a field with a 90° crosswind. He selected full flap and turned off the fuel cock and then held the aircraft in the flare for as long as possible. The aircraft initially touched down on the main wheels, but as the nose wheel touched down the aircraft nosed over coming to rest upside down. The pilot made the aircraft safe and exited the aircraft through the shattered canopy. He phoned his CFI using his mobile phone, and explained what had happened. Shortly afterwards a Tornado aircraft flew overhead, followed by a civilian helicopter, which landed and offered assistance. As this helicopter departed a Sea King from Wattisham arrived and took the pilot to hospital at Kings Lynn where he was examined by a doctor and then discharged.

Landing site

One of the reasons the pilot chose the landing site was that he could see a tractor operating in the field and therefore, if necessary, the driver would be able to assist him in vacating the aircraft. The field was large and flat, with trees along one edge and was being harrowed by the tractor driver. Ground marks indicated that the aircraft landed across the small furrows, touching down firstly on the mainwheels, followed shortly afterwards by the nose wheel. The marks indicated that the nose wheel then dug into the soft ground, the nose leg broke and the aircraft nosed over coming to rest inverted.

Meteorological information

The local weather observation at Marham at 1313 hrs on the day of the accident reported the surface wind as 030°/16 kt and the surface temperature as 5°C with a

dew point of 2°C. The prevailing visibility was recorded as 25 km with 7 km visibility to the north, where the accident occurred. There were also reports of sleet and rain showers. The cloud base was reported as scattered at 1,800 ft and broken at 4,000 ft. The CAA carburettor icing prediction chart indicates that with these conditions there would have been a serious risk of carburettor icing at any power setting.

Data from a radiosonde ascent for Nottingham, which the Met Office assessed was in the same air mass and therefore represented the conditions at the time of the accident, gave the temperature, dew point and relative humidity at 1,100 ft as 4.6°C, -0.7°C and 68%. These conditions would indicate that there was a moderate risk of icing at cruise power and a serious risk of icing at descent power.

Aircraft examination

An external examination of the engine and fuel system was carried out by the AAIB. Apart from mud, which had probably entered the fuel tank as a result of the accident, there was no evidence of any contaminants in the fuel system. Both the electrical and mechanical fuel pumps were found to be serviceable and all the carburettor fuel and heat controls were connected. The induction and ignition systems were intact and the spark plugs indicated that the engine had been running slightly rich. The engine turned over freely, the pistons appeared to be intact and the engine contained an acceptable amount of clean oil. Marks on the propeller indicated that it was producing relatively little power when it made contact with the ground.

A review of the maintenance records revealed that the engine had operated for just under 500 hours since the last factory overhaul with no recent faults that could account for the loss of power.

Analysis

The damage to the aircraft occurred as a result of the nose wheel sinking into the soft ground causing the nose leg to break and the aircraft to nose over.

There were no reports of any engine problems on the flights leading up to the accident flight, nor were there any obvious indications after the accident to suggest that there was a fault in the engine or fuel system. Not only were the weather conditions at the time conducive to carburettor icing, but the gradual reduction in

engine power described by the pilot is symptomatic of carburettor icing. A flying instructor from the club stated that he had experienced carburettor icing on this aircraft twice during the previous six months and on both occasions full power had been restored within 30 seconds of carburettor heat having been applied. It is possible that given the pilot's cruising height that he had insufficient time available after selecting carburettor heat for the ice to clear before he was committed to undertaking a forced landing.