

Jabiru UL-450, G-LEEE

AAIB Bulletin No: 11/2003	Ref: EW/G2003/08/49	Category: 1.3
Aircraft Type and Registration:	Jabiru UL-450, G-LEEE	
No & Type of Engines:	1 PTY 2200A piston engine	
Year of Manufacture:	2000	
Date & Time (UTC):	26 August 2003 at 1434 hrs	
Location:	Lockerley Farm, Romsey, Hampshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to nose landing gear and engine firewall	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	63 years	
Commander's Flying Experience:	15,482 hours (of which 167 were on type)	
	Last 90 days - 33 hours	
	Last 28 days - 8 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and subsequent enquiries by the AAIB	

Synopsis

The aircraft, which departed with enough fuel to provide an estimated endurance of two hours, suffered an engine failure 50 minutes into its flight. The nose landing gear detached during the subsequent forced landing in a field. Post-landing examination of the aircraft by the pilot showed that there was no fuel in the fuel tank although some fuel was present in the fuel drain. The on-board computer, set manually by the pilot with the fuel contents before flight and providing a display of fuel flow and fuel used, however, indicated 12.3 litres of fuel remaining.

History of Flight

The flight, with an anticipated duration of 65 minutes, was planned from the aircraft's base at Herring's Farm to Old Sarum near Salisbury, Wiltshire. The pilot checked the fuel contents visually through the fibreglass tank material using an engraved rule, which gave a reading of 20 litres. This concurred with the indication from the on-board fuel computer of over 20 litres, giving a flight endurance of two hours.

The flight was uneventful until approximately 50 minutes after takeoff when, at an altitude of 1,900 feet, the engine began to lose power. The pilot switched the fuel pump on and applied carburettor heat. The engine momentarily recovered but then failed resulting in the pilot carrying out a forced landing in a field. The aircraft touched down with full flap in a tail down attitude and with the propeller horizontal. As the aircraft nose wheel lowered onto the hard surface the pilot heard a noise that he described as a 'crack' and the pitch attitude continued to decrease. On vacating the aircraft the pilot observed that the nose landing gear had become detached.

The pilot observed that there was no evidence of fuel in the tank, although there was some fuel present when he operated the fuel drain. The on-board computer indicated 12.3 litres of fuel remaining.

Aircraft description

The Jabiru UL-450 is a high-wing, single engine, two-seater kitplane operated in the microlight category under a Permit to Fly. A single fibre glass fuel tank is located behind the two seats. Most aircraft of this type have a visual sight gauge bonded to the front of the tank allowing the fuel contents to be viewed against the sight gauge both in-flight and on the ground. A torch can be used to aid illumination of the fuel level in the tank. The sight gauge is an engraved rule which can be accurately calibrated when fitted to the tank. The manufacturer's UK agent additionally recommends that indelible marks indicating fuel quantity should be added under the gauge so that fuel quantity indication is not lost should the gauge become dislodged. The sight gauge was not permanently fitted on this aircraft so it did not give the pilot the option of reviewing the actual fuel contents in-flight.

The on-board computer is an optional kit for measuring instantaneous fuel flow and providing a display to the pilot of fuel flow, fuel used and, having manually input fuel contents at start-up, an in-flight calculation of fuel remaining. The computer gives an accurate indication of fuel flow and thus can be used to monitor fuel usage in-flight. The fuel remaining indication however, relies on the correct manual input of fuel contents at start-up.

Fuel contents

The last fuel uplift had been 45 litres, after which the pilot had visually checked the fuel contents with the sight gauge and recorded a total quantity of 60 litres. The tank capacity is 65 litres, however it is not advisable to completely fill the tank as there have been instances where fuel has siphoned from the tank through the overflow vent. The unusable fuel amounts to 2 litres. The method of viewing the fuel contents against the sight gauge can be subject to error as the fuel level can vary with aircraft attitude. A value for the total fuel contents of 60 litres was set on the on-board fuel computer and the pilot then used this indication of fuel remaining to plan his flights, giving an endurance of 6 hours at 10 litres/hour. The aircraft had logged approximately 5 hours since refuelling.