DHC-1 Chipmunk 22, G-BDCC

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Aircraft Type and Registration:	DHC-1 Chipmunk 22, G-BDCC
No & Type of Engines:	1 Lycoming O-360-A4A piston engine
Year of Manufacture:	1955
Date & Time (UTC):	29 August 1999 at 1535 hrs
Location:	Husbands Bosworth Airfield, Leicestershire
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - None
Injuries:	Crew - Serious - Passengers - N/A
Nature of Damage:	Damaged beyond economic repair
Commander's Licence:	Private Pilot's Licence
Commander's Age:	66 years
Commander's Flying Experience:	1,550 hours (of which 633 were on type)
	Last 90 days - 36 hours
	Last 28 days - 10 hours
Information Source:	AAIB Field Investigation

History of the flight

The aircraft was carrying out an aerotow of a glider. The take off and initial climb appeared normal with all the engine parameters satisfactory. At approximately 500 feet agl the pilot retracted the flaps and switched the fuel boost pump to OFF. As the climb continued through 800 feet, the engine speed began to oscillate between 2,400 and 2,200 RPM. The pilot therefore 'rocked' the wings of the aircraft to signal to the glider pilot to release from the tow rope, which he then did. The aircraft pilot reselected the fuel boost pump to ON and carried out the engine failure checks, but noted nothing unusual. He then started to turn the aircraft back towards the airfield, but during the turn the engine lost power.

He found that by varying the throttle position the engine would respond with some short bursts of power, but this was not sufficient to maintain height. He positioned the aircraft onto a northerly approach towards the western area of the airfield, which was downwind and downslope. He delayed selection of full flap until he felt that he was in a position to land. However, because of the tailwind and the downslope of his intended landing area he found himself unable to land before

approaching the northern boundary fence. He therefore decided that he would have to pull up over the fence and land in a field beyond. He then recollected hitting 'something solid' with his right main landing gear and the aircraft subsequently came to rest, badly damaged, in the field having passed over a 'cutting' with a quarry conveyor belt system which ran across the field. The pilot sustained serious injuries, but remembered switching off the electrical master switch and fuel boost pump switch, pulling the mixture control to the idle cut-off position and attempting to release his harness, since he was concerned about fire initiation. However, fire did not occur and the pilot was then rescued from the aircraft by personnel from the airfield, who arrived with a fire cover vehicle, and taken to hospital.

Initial inspection of the aircraft

The chief engineer of the aircraft engineering organisation on the airfield inspected the aircraft at the accident site and supervised its recovery. This examination of the aircraft did not reveal any apparent faults associated with the engine controls or the fuel system. All of the fuel lines were reportedly found to be clear of obstruction and the fuel filter was clean. An adequate quantity of fuel, of the correct type, was present in the tanks. The engine air intake system was found to be clear of obstruction. The aircraft was subsequently dismantled on site and recovered to a hanger on the airfield.

Carburettor and engine tests

The carburettor was removed and sent to an approved overhaul organisation for test and strip inspection. The associated tests and strip examination, which were observed by an AAIB Engineering Inspector, did not reveal any faults. The unit was reassembled, tested and returned to the facility where the aircraft wreckage was located and refitted to the engine. With the aircraft's fuselage firmly secured to some trestles and a serviceable propeller fitted, the engine was ground run. However, since the fuselage was mounted on trestles the engine was only run up to 1,600 RPM, but it operated satisfactorily with the engine gauges reading normally; the magneto checks produced an acceptable drop in engine speed of 50 to 75 RPM

Discussion

Prior to the accident, the aircraft had conducted a number of flights since it had last been refuelled, with no reported engine problems.

On the 3rd of June 1999 the aircraft had been involved in an earlier accident (AAIB Bulletin 8/99) when the aircraft had failed to become airborne and, during the rejected take off, had skidded on wet grass and collided with the boundary fence of the airfield. Damage was limited to the airframe and leading edge of the propeller. The propeller damage was then rectified and a 'runout check' carried out on the engine crankshaft. No other work had been required on the engine or it's systems, and the aircraft was declared airworthy 4 weeks after that accident. It had then flown satisfactorily for some 50 hours prior to this latest accident. In view of this and the apparent satisfactory operation of the engine after the accident, it was considered that some temporary restriction of fuel flow to the engine probably occurred during the climb, which reselection of the boost pump was unable to overcome.