

No: 11/88

Ref: EW/C1080

Category: 1c

Aircraft Type and Registration: Grob 109 B Motor Glider, G-BLGY

No & Type of Engines: 1 Grob 2500 E1 piston engine

Year of Manufacture: 1984

Date and Time (UTC): 16 August 1988 at 1429 hrs

Location: 800 m ENE of Wycombe Air Park, Booker, Bucks

Type of Flight: Private (pleasure)

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - 1 Passengers - 1

Nature of Damage: Fuselage forward of cockpit totally destroyed, substantial damage to the wings and to the floor under the cockpit. The cockpit shell was undamaged.

Commander's Licence: Private Pilot's Licence

Commander's Age: 48 years

Commander's Total Flying Experience: 1500 hours (of which 2.5 were on type)

Information Source: AAIB Field Investigation

The aircraft had taken off from Kidlington, at 1310 hrs, with about 16 gallons of fuel on board, and had landed at Wycombe Air Park (Booker) at about 1335 hrs. The pilot has since stated that, having shut down the aircraft, he carried out transit checks to prepare it for the return journey.

At Wycombe Air Park, the pilot loaded 60 lb of personal freight and, together with the passenger, boarded the aircraft. Assuming that his original estimate of a three quarters full fuel tank at Kidlington was correct, 15 gallons (105 lb) of fuel remained. This provided a take-off weight of 1904 lb and a Centre of Gravity at 13.42 inches aft of datum. The Flight Manual states that the MTWA is 1874 lb and the Centre of Gravity range is 11.1 to 16.8 inches aft of datum. The 30 lb apparent overweight situation could however be due to an over-estimate of the fuel contents.

At 1428 hrs, when the aircraft took off, the weather at Booker was reported as: wind calm, visibility 8 km in haze and a temperature of 22°C. The aircraft took off from the tarmac runway 07 and was seen

by several witnesses to make a rather longer than normal take-off roll, followed by an initial climb which was noticeably slow and shallow and conducted with an unusually high nose-up attitude. The passenger, a professional pilot, has stated that he saw the speed decay to around 40 kt ($V_s = 38-40.5$ kt, according to engine power and attitude), but believed that it was regained by lowering the nose of the aircraft. During this climb, at 1-200 feet, the aircraft was seen to rock its wings and then, almost immediately, roll to the right and dive to the ground in a right spiral. There was no fire and the upper torso restraints of both occupants withstood the forces of the impact.

The witnesses also commented that the engine note had seemed to indicate a lower rpm than they were accustomed to hearing when a Grob took off and, in confirmation, the passenger has since stated that the engine tachometer had indicated around 2100 rpm during the engine run-up and also during both take-offs. The Flight Manual states that this figure should be 2700 ± 100 rpm. It further states that "If only 2000 ± 100 is achieved during the run-up, the propeller is in the 'cruise' (coarse) position and must be set to 'climb'....". During flight, changing from coarse to fine pitch is not achieved, with this type of propeller, by merely moving a pitch lever forward: the engine rpm must be reduced to 1400 and the speed to 59 kt. This is clearly not a desirable action whilst attempting to maintain a normal initial climb-out profile nor, indeed, possible whilst attempting to gain height in order to clear obstacles. It is therefore apparent that even if the pilot had at that late stage realised that the pitch was set to coarse, he was not necessarily in a position to change to fine pitch.

Inspection of the aircraft at the accident site showed that the airbrakes had extended slightly; however, a more detailed examination at Farnborough revealed that the airbrake control torque tube could have been rotated into this position by crash forces. The propeller pitch change mechanism had been destroyed by the impact and gave no clear indication of pitch at the time of the accident.