

No: 1/90

Ref: EW/G89/11/01

Category: 2c

Aircraft Type and Registration: Robinson R22 Beta, G-GILY

No & Type of Engines: 1 Lycoming O-320-B2C piston engine

Year of Manufacture: 1987

Date and Time (UTC): 5 November 1989 at 0857 hrs

Location: Micklefield / Sarratt, Hertfordshire

Type of Flight: Private (pleasure)

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - None Passengers - 1 (minor)

Nature of Damage: Severe

Commander's Licence: Private Pilot's Licence (A,B,H) with IMC Rating

Commander's Age: 52 years

Commander's Total Flying Experience: 1,302 hours Fixed Wing
167 hours Rotary Wing (of which 135 were on type)

Information Source: Aircraft Accident Report Form submitted by the pilot and additional AAIB enquiries

The pilot had planned a short positioning flight from a farm at Harefield, Middlesex to Leavesden airfield. Some difficulty was encountered in starting the engine, although the organisation responsible for maintaining the aircraft later considered that this may have been due to inadequate priming.

The pilot noted that it was necessary to apply about 1" of movement to the carburettor hot air control lever during the engine warm-up procedure in order to maintain a +10°C indication on the carburettor air temperature (CAT) gauge. This setting was maintained during the subsequent uneventful departure.

There was sufficient time available to allow a 15 minute detour in order to arrive at Leavesden at the official opening time of 0900 hrs. The aircraft performed normally during this period, which was flown at 1700 ft altitude. Prior to calling Leavesden the pilot descended to circuit height with a view to carrying out a practice autorotation about 2nm west of the 06 threshold. Having selected a practice field the pilot applied an additional 1" movement to the carburettor heat control and lowered the collective lever. After the aircraft had stabilised in a 65kt descent, during which time the pilot was monitoring the rotor rpm, the engine rpm suddenly dropped to zero. He then raised the collective lever, which caused the low rotor rpm warning horn to sound, and so he lowered it again. During the

descent the pilot made one attempt to restart the engine using the starter, but to no avail. At about 50ft agl he commenced the flare, which arrested the descent. Following ground contact the aircraft rolled over to the right, sustaining considerable damage in the process. The pilot was uninjured and exited through the shattered windscreen. However the passenger received injuries to a hand and foot. A portable telephone carried in the aircraft was used to alert the emergency services.

The field had a crop of cabbages and the soil was very wet. The pilot considered that this, coupled with the windless conditions and his limited experience of engine off landings had contributed to the hard landing and subsequent severe damage to the helicopter.

A meteorological observation taken at Leavesden at 0850 hrs recorded wet and dry bulb temperatures of 2° and 2.2°C respectively, dew point of 2°C and relative humidity of 97%. Reference to a carburettor icing chart showed serious icing at any power setting under these conditions.

Subsequent examination of the engine failed to reveal any defect that could have contributed to the accident, and no water was found in the fuel that had remained in the aircraft.

The pilot considered that he may not have applied full carburettor heat and moreover had not allowed any time for it to take effect before he lowered the collective lever. The appropriate section of the R22 Flight Manual stated: "...During autorotation or reduced power below 18 inches manifold pressure, apply full carb. heat regardless of gauge temperature..... Additional information is given in Section 3 of the Lycoming Operator's Manual."

Further information on the subject of carburettor icing can be found in the CAA's General Aviation Safety Sense leaflet No. 3 "Winter Flying", and also in Aeronautical Information Circulator 1/1985.