

**Aircraft type and registration:** Robinson R22 G-BMBX

**No & Type of Engines:** One Lycoming O-320-A2B piston engine

**Year of Manufacture:** 1980

**Date and time (GMT):** 23 April 1986 at 1155 hrs

**Location:** Blackbushe Airport, Surrey

**Type of flight:** Training

**Persons on board:** Crew — 2                      Passengers — None

**Injuries:** Crew — 1 (minor)                      Passengers — N/A

**Nature of damage:** Main rotor head detached, tail rotor drive sheared, damage to cockpit structure

**Commander's Licence:** Airline Transport Pilot's Licence (helicopters)

**Commander's Age:** 42 years

**Commander's total flying experience:** 150 hours fixed wing — 5291 hours rotary wing (of which 29 were on type)

**Information Source:** Aircraft Accident Report Form submitted by the pilot and site visit by AIB.

The aircraft took off for an instructional sortie on the student's sixth lesson. Following some 10 minutes hovering practice, 7 or 8 landings and take-offs were completed with split controls, ie the student had either collective and pedals or the cyclic. The student then carried out a landing with full control. Following a few minutes discussion on the ground, the student proceeded to take off with full control. As the aircraft became light on its skids, it started to roll to the right; there followed a very rapid roll to the right with the main rotor blades striking the ground within  $\frac{1}{2}$  to 1 second of the initial roll. The engine continued to run following detachment of the rotor head until it was shut down by the instructor, who operated the fuel valve and idle cut-off.

With the aircraft lying on its right side, both crew members evacuated via the left door. There was no fire despite a major fuel leak from the damaged tank.

The student had suffered bruising and a cut to his right temple due to his head contacting the distorted cockpit structure. The instructor was uninjured.

No pre-accident failure of the flying controls or drive train was found, and the instructor attributed the accident to a dynamic roll-over. He commented however that the design of the cyclic control was such that it was difficult for the instructor to keep his hand near the stick in order to take control rapidly from a student.

(Note: The cyclic control consists of a single column in the centre of the cockpit, on the top of which is pivoted a cross tube with the instructor's and student's cyclic handgrips mounted at either end.)