

Robinson R22 BETA, G-GEGE

AAIB Bulletin No: Ref: EW/G2000/12/03 **Category:** 2.3

Aircraft Type and Registration: Robinson R22 BETA, G-GEGE

No & Type of Engines: 1 Lycoming O-360-J2A piston engine

Year of Manufacture: 1999

Date & Time (UTC): 16 December 2000 at 0924 hrs

Location: Apple Barn, Gamston, Nottinghamshire

Type of Flight: Private

Persons on Board: Crew - 1 - Passengers - 1

Injuries: Crew - None - Passengers - 1 Minor

Nature of Damage: Damaged beyond economic repair

Commander's Licence: Private Pilot's Licence (Helicopters and Gyroplanes)

Commander's Age: 43 years

Commander's Flying Experience: 71 hours (of which 63 were on type)

Last 90 days - 8 hours

Last 28 days - 8 hours

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

After completing his normal external and internal checks, the pilot started the engine and prepared to lift from his private site. He increased his manifold pressure to 18 in and looked ahead as he further increased power. He was then aware of the left skid lifting first and quickly moved his 'cyclic' control to the left and slightly forward. The right skid then lifted, the helicopter rolled left and the left skid contacted the ground hard; G-GEGE rolled forward onto its left side. With the helicopter lying on its left side, the pilot in the right seat was unable to reach his release buckle with either hand. However, once the left seat passenger had released himself and climbed out of the helicopter, the pilot was able to release himself.

The pilot subsequently acknowledged that the helicopter had been parked at his site for a week and that the parking area was very wet. He considered that the skids had sunk into the wet ground and may also have been frozen to the ground. As an additional safety point, the pilot also commented that he was surprised when he subsequently realised that a stone, dislodged during the accident, had travelled some 50 metres and broken a large window.

Due to the pilot's initial report that he had some difficulty releasing his harness, further enquiries were made about the harness fitted to this type of helicopter. The harness is an inertial reel system consisting of a lap and a diagonal strap, with an airline type release buckle located inboard for each occupant. The pilot considered that his harness was tight but, immediately following the accident, he was aware of hanging to the left and slightly forward. The Civil Aviation Authority Airworthiness Division Specification No 1, issued on 24 September 1979, details the requirements for safety belts in rotorcraft. Two relevant extracts are as follows:

1. 'The wearer, shall be able to release the belt with either hand, regardless of aircraft orientation in an otherwise survivable accident without undue difficulty.'
2. 'To avoid inadvertent release there shall be a free movement of the lever and the belt shall remain fastened until the lever attains an angle of not less than 70° or not more than 95° to its position at rest. The lever shall be spring loaded to the position it normally assumes when the belt is fastened.'

To comply with CAA regulations, the manufacturer had fitted a new type of harness prior to the initial registration in UK. Since then, and prior to the accident involving G-GEGE, there has been only one report of any difficulty involving harness release from this type of helicopter. That involved a R22 helicopter, registration EI-XMC where the passenger drowned after an engine stoppage and subsequent ditching into the sea on 1 June 1992. On that occasion, the passenger was on her first helicopter flight and, after the accident the harness release mechanism was confirmed as serviceable.

The pilot of G-GEGE was aware of the extent of movement required to operate the release mechanism but was unable to reach the buckle with either hand. However, certain factors may have contributed to this lack of accessibility. The pilot was understandably concerned about the situation particularly when he was conscious of the noise of fuel leaking. Secondly, the release buckles are adjacent to each other and there is limited room in this type of helicopter with two reasonably sized people on board. Finally, the pilot could not confirm the position of the collective lever when he was trying to reach the release buckle but a raised collective lever position could have contributed to his difficulty. Nevertheless, the pilot was able to operate the mechanism once the passenger was out of the helicopter.