

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Robinson R44 Raven II, G-IGJC	
<b>No &amp; Type of Engines:</b>	1 Lycoming IO-540-AE1A5 piston engine	
<b>Year of Manufacture:</b>	2008	
<b>Date &amp; Time (UTC):</b>	22 November 2008 at 1550 hrs	
<b>Location:</b>	Liverpool Airport	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - 3
<b>Injuries:</b>	Crew - 1 (Minor)	Passengers - 1 (Minor)
<b>Nature of Damage:</b>	Aircraft damaged beyond economic repair	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	48 years	
<b>Commander's Flying Experience:</b>	104 hours (of which 21 were on type) Last 90 days - 20 hours Last 28 days - 17 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

### Synopsis

When the collective was raised on takeoff the helicopter began to rotate quickly. Unable to regain control in flight the pilot lowered the helicopter to the ground where it rolled over.

### History of the flight

The pilot and three passengers boarded the helicopter with the intention of conducting a local flight from the general aviation apron at Liverpool Airport. After completing normal starting procedures the pilot commenced the takeoff. In doing so, he raised the collective control more quickly than normal, causing the aircraft to lift very rapidly and yaw. Judging that the yaw was to the left the pilot applied right yaw pedal but with this input the helicopter span faster.

The pilot was thrown repeatedly against the right cockpit door during this manoeuvre and found it difficult to remain in his seat or control the helicopter. Because of the risk of colliding with parked aircraft nearby, he decided to lower the helicopter gently to the ground. He realised that this would probably result in it turning over. His next recollection was that the helicopter was lying on its left side with substantial damage to the rotor blades and left cockpit area. Pieces of the main rotor had also caused damage to the engine cowling of an aircraft parked approximately 100 m away.

Several witnesses went to assist the occupants, who vacated the aircraft through the topmost (normally the right) cabin door. The aerodrome fire and rescue service

also attended although, despite some fuel leakage, there was no fire. The pilot and one passenger received minor injuries and the others were unhurt.

### **Other information**

Viewed from above, the main rotor of the R44 rotates anticlockwise. Consequently, in the absence of pilot inputs, the helicopter would tend to rotate clockwise (or to the right as viewed from the cockpit) as the collective was raised and power applied to the main rotor. Instructors familiar with the type commented that a swift upward application of the collective might cause considerable yaw to the right, but that this tendency could be controlled easily with the application of opposite (left) yaw pedal, even after rotation had developed.

The pilot stated that in retrospect he was not certain of the direction of yaw of the helicopter immediately after takeoff. An instructor with whom he discussed the

accident had heard from several witnesses that rotation had in fact been to the right. Other witnesses contacted by the AAIB were unable to recall the direction of rotation.

Technical records indicated that the aircraft had flown for 14 hours since receiving a scheduled maintenance inspection on 24 October 2008. The next check was due in 34 flying hours or on 23 April 2009, which ever occurred first. There was no record of any maintenance activity or mechanical defect that might have affected the accident.

### **Discussion**

It is likely that the helicopter yawed right as the collective was raised. It might have been possible to recover the aircraft to controlled flight by applying left yaw pedal but application of right yaw pedal probably increased the rate of rotation.