

## SERIOUS INCIDENT

<b>Aircraft Type and Registration:</b>	Robinson R44 Astro, G-BZGO	
<b>No &amp; Type of Engines:</b>	1 Lycoming O-540-F1B5 piston engine	
<b>Year of Manufacture:</b>	2000 (Serial no: 757)	
<b>Date &amp; Time (UTC):</b>	13 June 2016 at 1547 hrs	
<b>Location:</b>	Approx 8 miles north of Manchester Barton Airport	
<b>Type of Flight:</b>	Training	
<b>Persons on Board:</b>	Crew - 2	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Left windscreen broken	
<b>Commander's Licence:</b>	Commercial Pilot's Licence	
<b>Commander's Age:</b>	57 years	
<b>Commander's Flying Experience:</b>	4,000 hours (of which 1,900 were on type) Last 90 days - 110 hours Last 28 days - 39 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and additional inquiries by the AAIB	

### Synopsis

While flying at approximately 1,500 ft and 90 kt the helicopter struck a bird, which broke the left windscreen and entered the cockpit. The crew declared a MAYDAY, but were uninjured and made a successful landing.

The Robinson R44 windscreen is not designed to withstand birdstrikes and the design requirements do not require it to do so. The United States (US) Federal Aviation Administration (FAA) is reviewing birdstrike protection requirements for Normal category rotorcraft.

### History of the flight

The helicopter had departed from Manchester Barton Airport and was flying at approximately 1,500 ft and 90 kt. There were two people on board; the commander in the left seat and a qualified helicopter pilot undergoing refresher training in the right seat.

The commander had just taken control of the helicopter when a bird struck and broke through the left windscreen. The bird was killed on impact and entered the cockpit with its wings unfolded. The pilot in the right seat took control and the helicopter lost approximately 700 ft in altitude whilst the crew dealt with the incident. They declared a MAYDAY and returned to Barton for an uneventful landing (Figure 1). Neither crew were injured.



**Figure 1**

Damage to left windscreen of G-BZGO

The bird was not sent for analysis, but photographs showed that it was most likely a Herring Gull. The pilot reported that the bird weighed approximately 0.6 kg.

### **Birdstrike requirements**

The Robinson R44 was certified to FAA Regulation (FAR) Part 27. FAR 27 applies to Normal category rotorcraft with maximum weights of 7,000 lb (3,175 kg) or less and up to nine passenger seats. There are no requirements in FAR 27 relating to birdstrike resistance but there is a requirement that *'windshields and windows must be made of material that will not break into dangerous fragments'*.

The equivalent European Aviation Safety Agency (EASA) Certification Specification, CS-27, contains the same requirements as FAR 27.

### **Previous incidents**

The AAIB has issued two previous reports after similar events on helicopters certified to the requirements of FAR 27: N109TK (AAIB Bulletin 3/2012) and G-ODAZ (AAIB Bulletin 6/2014).

### **Safety Actions**

In November 2010, the NTSB wrote to the FAA with Safety Recommendations following an investigation of a Sikorsky S-76C birdstrike accident that resulted in eight fatalities. The S-76C is certified to FAA Part 29, which specifies the requirements for Transport

category rotorcraft. FAR 29 includes birdstrike requirements and one recommendation addressed the fact that similar requirements are not defined in Part 27:

*'Revise 14 Code of Federal Regulations Part 27 to specify a bird weight and velocity of impact that the helicopter must withstand and still be able to land safely and that the windshield must withstand without penetration. Consider current military and civilian bird-strike database information and trends in bird populations in drafting the revision (A-10-147)'*

In response to this recommendation, the FAA have convened an Aviation Rulemaking Advisory Committee (ARAC) Rotorcraft Birdstrike Working Group. The working group has been tasked with providing recommendations for enhancing birdstrike protection for Normal category rotorcraft and the helicopter manufacturer has confirmed that they are participating in this initiative.

EASA commissioned a study in 2008/2009 to investigate the adequacy of current aircraft certification requirements and the final report included a recommendation that CS-27 be enhanced, preferably to include a 2 lb/1 kg windshield birdstrike capability. EASA are participants in the FAA Rotorcraft Birdstrike Working Group and any decision to consider amending CS-27 is dependent on the outcome.

The NTSB advise that the helicopter manufacturer is investigating tougher windscreen materials to improve occupant protection in the event of a birdstrike.