Air Accident Investigation Unit Ireland

FACTUAL REPORT

ACCIDENT
RANS S6-ES, G-BZRA
Cloongoonagh, Co Mayo
14 April 2014

An Roinn Iompair
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport

Foreword

This safety investigation is exclusively of a technical nature and the Final Report reflects the determination of the AAIU regarding the circumstances of this occurrence and its probable causes.

In accordance with the provisions of Annex 13[1] to the Convention on International Civil Aviation, Regulation (EU) No 996/2010[2] and Statutory Instrument No. 460 of 2009[3], safety investigations are in no case concerned with apportioning blame or liability. They are independent of, separate from and without prejudice to any judicial or administrative proceedings to apportion blame or liability. The sole objective of this safety investigation and Final Report is the prevention of accidents and incidents.

Accordingly, it is inappropriate that AAIU Reports should be used to assign fault or blame or determine liability, since neither the safety investigation nor the reporting process has been undertaken for that purpose.

Extracts from this Report may be published providing that the source is acknowledged, the material is accurately reproduced and that it is not used in a derogatory or misleading context.

[1] **Annex 13**: International Civil Aviation Organization (ICAO), Annex 13, Aircraft Accident and Incident Investigation.
[2] **Regulation (EU) No 996/2010** of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation.
[3] **Statutory Instrument (SI) No. 460 of 2009**: Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulations 2009.

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In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No 996/2010 and the provisions of SI 460 of 2009, the Chief Inspector of Air Accidents on 14 April 2014, appointed Mr Thomas Moloney as the Investigator-in-Charge to carry out an Investigation into this Accident and prepare a Report.

Aircraft Type and Registration:	RANS S6-ES, G-BZRA	
No. and Type of Engines:	1 x Rotax 912-UL	
Aircraft Serial Number:	PFA 204-13683	
Year of Manufacture:	2001	
Date and Time (UTC)[4]:	14 April 2014 @ 16.15 hrs	
Location:	N53° 49.9', W008° 44.5' / Cloongoonagh, Co Mayo, Ireland	
Type of Operation:	General Aviation	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - Nil	Passengers - Nil
Nature of Damage:	Substantial	
Commander's Licence:	PPL (M)[5] issued by the Irish Aviation Authority (IAA)	
Commander's Details:	Male, aged 48 years	
Commander's Flying Experience:	226 hours, of which 13 were on type	
Notification Source:	Pilot	
Information Source:	AAIU Field Investigation. AAIU Pilot Report Form submitted by Pilot	

[4] **UTC**: Universal Time Co-ordinated. All timings in this report are quoted in UTC; to obtain the local time add one hour.
[5] **PPL (M)**: Private Pilot Licence (Microlight).

SYNOPSIS

The microlight aircraft was attempting to take-off from a private grass airstrip, with two occupants on board. It became airborne but then failed to climb away. It landed in a field adjoining the airstrip, sustaining substantial damage. There were no injuries.

1. FACTUAL INFORMATION

1.1 History of the Flight

The Pilot informed the Investigation that he was attempting to take-off from Runway (RWY) 02 at Cloongoonagh Airfield in Co Mayo, a private grass airstrip located approximately five miles from Ireland West Airport, Knock (EIKN). He stated that RWY 02 was 280 metres (m) in length. There was one passenger on board and both occupants weighed approximately 88 kg each. The Pilot stated that the weather was good and that there was a light breeze straight down the runway. He described how, just after the aircraft became airborne, *"it seemed to lose the ability to climb out."* It touched down in an adjoining agricultural field, just past the far end of the runway, **Photo No. 1**. The Pilot stated that the level of the field was approximately 5 m lower than that of the runway end. The aircraft suffered substantial damage. There were no injuries.

Photo No. 1: G-BZRA after the Occurrence

1.2 Damage to Aircraft

The cockpit cage was distorted and the windscreen was damaged. The nose wheel leg and the starboard main landing gear leg were both sheared off. The port main landing gear leg was bent. The engine bearer arms failed and the engine was detached from the airframe. The propeller was destroyed with only the two blade stubs remaining attached to the propeller hub. Only one of the two propeller blades was recovered. This blade was fractured near the root and also sustained damage at the tip. The nature of the fractures of the composite blades and of the damaged blade tip showed evidence of rotation at impact. Some of the fabric coverings were torn and the engine cowling was damaged.

1.3 Aircraft Information

The RANS S6-ES Coyote II is a single-engined, two-seat high-wing monoplane in the microlight aircraft class. The structure consists of a welded steel cockpit cage, with a bolted aluminium tube rear fuselage, wing and tail surfaces which are all covered in fabric. G-BZRA had a maximum permitted empty weight of 268 kg and a maximum permitted gross weight of 450 kg.

G-BZRA was amateur-built in 2001 and, at the time of the accident, it held a UK Light Aircraft Association (LAA) Certificate of Validity – Permit to Fly which was effective from 18 August 2013 until 17 August 2014. At the Permit renewal inspection in August 2013, the aircraft had a recorded total airframe time of 691 hours 5 minutes. The Pilot took delivery of the aircraft on 17 March 2014 when the total airframe time was 695 hours 10 minutes. On 24 March 2014, the IAA granted permission for G-BZRA to fly without a normal Certificate of Airworthiness; this was valid until 17 August 2014. The final aircraft logbook entry was made on the 11 April 2014 at a total airframe time of 701 hours 30 minutes. The final engine log book entry was dated 14 April 2014 at a total engine time of 770 hours 10 minutes.

The LAA provided the Investigation with data relating to G-BZRA. The aircraft had been completely re-covered in 2009 and an empty weight of 266 kg was recorded at the time. Flight test information for the years 2009 to 2013 provided by the LAA included climb rate data and maximum static engine RPM[6] achieved on the ground.

This data is as follows:-

Date	Max Static RPM	Climb Rate (feet/minute)
August 2009	5650	857
August 2010	5650	952
August 2011	5650	1000
August 2012	5650	937
August 2013	5650	1000

[6] **RPM:** Revolutions per minute.

1.4 Airfield Information

An Inspector of Air Accidents met the Pilot at Cloongoonagh Airfield a few days after the accident. The runway has a northeast/southwest orientation with a hill towards the centre. The runway orientation as derived from GPS[7] was 045°M in the direction of take-off, with the hill about 2/3 of the way along it. The runway length was measured at 295 m. The surface was grassy with a 3 m wide mown strip in the centre, while the total width was generally around 20 m. At the end of the runway, the ground dropped away sharply into the adjoining field, the surface of which was soft. The Pilot described how the aircraft became airborne at the top of the hill and the aircraft seemed to descend afterwards. His assessment of the cause of the accident was "*possible windshear*", as he was aware that the weather aftercast from EIKN reported wind from variable directions.

1.5 Meteorological Information

The METARs[8] from EIKN, 5 miles from the accident site, included the following information:

16.00 hrs Wind variable 03 kts.
16.30 hrs. Wind 360° 04 kts, varying between 330° and 030°.
17.00 hrs. Wind 010° 06 kts, varying between 330° and 040°.

2. AAIU COMMENT

The data provided by the LAA shows no evidence of a decline in engine performance over five annual inspections in the years prior to the accident. The Pilot considered that the inability of the aircraft to climb away once it had become airborne may have been due to *"windshear"*. The wind direction at nearby EIKN was variable around the time of the accident. It is possible that, due to a shifting wind gradient encountered during the take-off run, then the aircraft may have encountered a downdraft as it became airborne at the top of the hill. Another potential factor is ground effect. It is possible that the aircraft lifted off in ground effect at the top of the hill, but that due to the topography of the runway, it came out of ground effect before the aircraft had achieved flying speed. The Investigation also notes that there were two occupants on board G-BZRA at the time of the occurrence and that it is likely that the aircraft was close to its maximum permitted gross weight of 450 kg.

- END -

[7] **GPS**: Global Positioning System.
[8] **METAR**: Actual weather report.

In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No 996/2010, and Statutory Instrument No. 460 of 2009, Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulation, 2009, the sole purpose of this investigation is to prevent aviation accidents and serious incidents. It is not the purpose of any such investigation and the associated investigation report to apportion blame or liability.

A safety recommendation shall in no case create a presumption of blame or liability for an occurrence.

Produced by the Air Accident Investigation Unit

AAIU Reports are available on the Unit website at www.aaiu.ie

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