Air Accident Investigation Unit Ireland

PRELIMINARY REPORT

ACCIDENT

Laser Z200, PH-LSR

Abbeyshrule, Co. Longford, Ireland

20 March 2016

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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This Preliminary Report contains information, as known at this time, and does not contain analysis or conclusions. This information is therefore subject to change, and may contain errors; any errors in this Report will be corrected in the Final Report.

AIRCRAFT INFORMATION:		
Manufacturer:	Homebuilt	
Model:	Laser Z200	
Nationality:	United Kingdom	
Registration:	PH-LSR	
State of Registry:	Netherlands	
Serial Number:	PFA 123-12682	
Year of Manufacture:	1996	
TYPE OF OPERATION:	Private	
DATE / TIME (UTC)[4]:	20 March 2016 @ 17.45 hrs	
LOCATION:	Abbeyshrule, Co. Longford, Ireland	
PERSONS ON BOARD:	Crew - 1	Passengers - 0
INJURIES:	Crew - 1 (Fatal)	Passengers - 0
DAMAGE:	Aircraft Destroyed	
INVESTIGATOR-IN-CHARGE:	Kevin O'Ceallaigh	

[4] **UTC**: Co-ordinated Universal Time. All timings in this report are quoted in UTC (equivalent to local time).

INTRODUCTION

Abbeyshrule Aerodrome (EIAB) is a private licenced aerodrome located 11 nautical miles south east of Longford town. The main runway (RWY) is 790 metres long and is designated as RWY 28/10[5]. When taking off from either RWY at EIAB, a pilot will normally conduct a left-hand circuit. **Figure No. 1** provides a graphic representation of the aerodrome and the approximate track flown when positioning to land on RWY 28 following a take-off from RWY 28. This track is generally referred to as the downwind leg of the circuit.

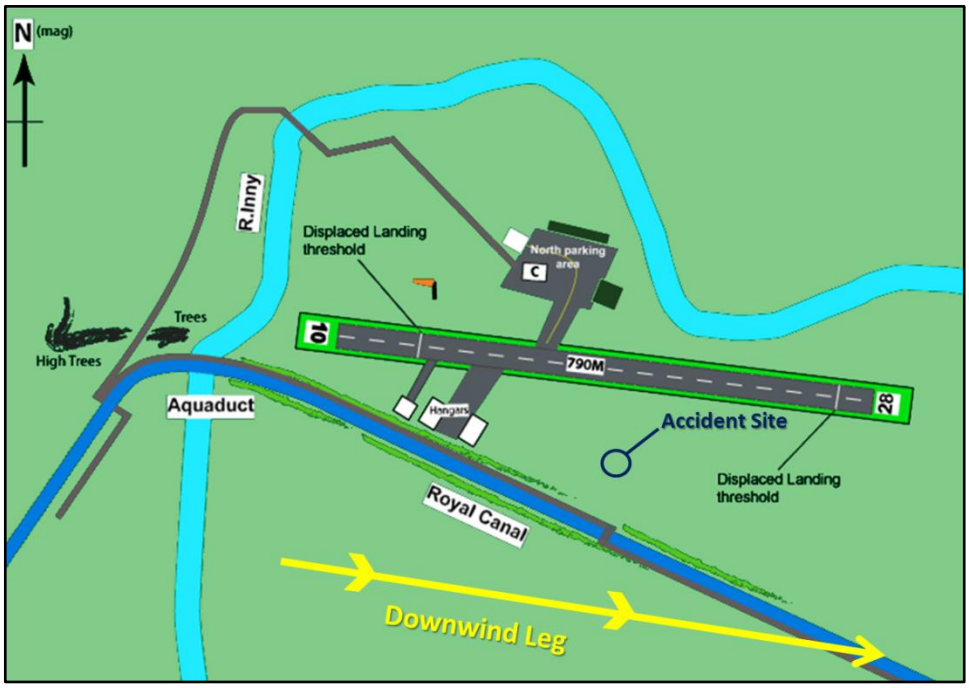

Figure No. 1: Abbeyshrule Aerodrome diagram including orientation of the 'downwind leg' for RWY 28 (*from EIAB website,* not to scale)

On the day of the accident the Pilot had travelled by air to the Aran Islands with some friends and members of a local flying club. They travelled in two groups; one group in a Cessna 182S and the other group in a Samba XXL aircraft. The accident Pilot flew the Cessna 182S to the Aran Islands and another member of the flying club flew it back to EIAB with the accident Pilot as a passenger.

After landing at EIAB the Pilot said that he was going to take his recently purchased aircraft, a Laser Z200, for a local flight. He was subsequently observed preparing it for flight. The Pilot then boarded the aircraft and closed the canopy.

[5] 28/10: Runways are designated according to compass alignment rounded to the nearest ten degrees. When aligned with runway 28 the aircraft will be pointing on a magnetic heading of approximately 280 degrees. Conversely when aligned with runway 10 the aircraft will be pointing on an approximate magnetic heading of 100 degrees.

1. THE OCCURRENCE

1.1 History of Flight

The history of flight was determined by reviewing video data recovered from cameras that had been fitted to the aircraft, in addition to eyewitness reports. The cameras recorded the majority of the flight. However, the final file on each of the micro SD[6] memory cards was not viewable (See **Section 4.1**).

The Pilot started the engine, taxied the aircraft to the threshold of RWY 10 and departed in an easterly direction. The aircraft climbed in this direction for a short period of time before it turned to fly back towards EIAB and align with the approach path for RWY28. During the twelve minutes from take-off until the end of the viewable recording, the aircraft performed a total of five left-hand circuits to RWY 28. During three of the circuits the aircraft conducted a touch and go[7] on RWY 28; one of these circuits also included three aileron rolls[8] to the left during the downwind leg. The two circuits that did not include a touch and go included aerobatic and inverted manoeuvres overhead the aerodrome.

As the aircraft commenced a left turn at the beginning of a sixth circuit the viewable recording stopped. The flight path of the aircraft was observed by a number of witnesses located on the aerodrome and in the local vicinity. The sixth circuit included aileron rolls overhead the airfield. It then turned onto the downwind leg again for a seventh circuit. As the aircraft passed abeam the aerodrome in an easterly direction it conducted more rolling manoeuvres. A witness reported seeing the aircraft descending rapidly towards the ground during these manoeuvres and that it impacted the ground in a nose-down attitude. The elapsed time from take-off until the end of the flight was estimated to be between 14 and 15 minutes flying time.

1.2 Aircraft Information

The aircraft, a Laser Z200, was a single seat, competition, aerobatic, mid-wing monoplane with an enclosed cockpit situated between the front (main) and rear wing spar positions. The aircraft was comprised of a fuselage and tail section of welded steel tube construction with cantilever plywood-covered wooden wings. The wing was a one-piece unit bolted directly to the fuselage frame truss. The aircraft was fitted with a cantilever sprung aluminium alloy fixed main undercarriage and a sprung and steerable tail wheel fitted to a cantilever steel spring.

The aircraft (**Photo No. 1**) was first registered in the United Kingdom (UK) on 15 June 1995. It was originally built in the UK and issued with an Airworthiness Approval by the *Popular Flying Association* (PFA) on behalf of the *UK Civil Aviation Authority* (CAA) on 29 June 1996.

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[6] **SD:** Secure Digital.

[7] **Touch and go:** The aircraft lands on a runway and, without coming to a stop, accelerates and takes-off again. This manoeuvre permits more practice take-offs and landings within a given period of time.

[8] **Aileron Roll:** An aerobatic manoeuvre in which the aircraft rotates through 360 degrees about its longitudinal axis until it reaches its original orientation.

The aircraft was transferred to the *Netherlands Civil Aircraft Register* on 21 June 2011 and received a Special Certificate of Airworthiness from the *Civil Aviation Authority of the Netherlands* on 22 June 2011.

The Special Certificate of Airworthiness was re-issued annually thereafter and was valid until 22 June 2016. The accident Pilot purchased the aircraft on 1 February 2016 and the aircraft was delivered to EIAB on 13 March 2016. The aircraft conducted one flight at EIAB prior to the accident flight. This flight was conducted on 17 March 2016 by the accident Pilot and was his first flight in PH-LSR.

Photo No. 1: The accident aircraft, March 2016 (*Source: K. Donohoe*)

1.3 Engine Information

The aircraft was fitted with a Lycoming IO-360 piston engine, which is a fuel injected, horizontally opposed, four-cylinder, four-stroke, air-cooled, unit. The version installed on PH-LSR was an AEIO-360-A1E, which delivered a power output of 149 kW[9] (200 HP[10]) at 2,700 rpm. The engine was fitted with a three bladed constant speed, variable pitch propeller manufactured by MT-Propeller GmbH of Atting, Germany.

2. POST-ACCIDENT RESPONSE

2.1 Immediate Response

The emergency services were notified by a '999' telephone call from one of the eyewitnesses at EIAB. The Irish Air Corps Emergency Aeromedical Helicopter from Athlone was tasked by the NACC[11] at 17.46 hrs to attend the scene and landed at EIAB at 18.00 hrs.

[9] **kW:** Kilowatt.
[10] **HP:** Horsepower.
[11] **NACC:** National Aeromedical Co-ordination Centre.

The AAIU was notified by a witness who contacted one of the Inspectors directly at 17.52 hrs. Three Inspectors of Air Accidents attended the accident site at 20.30 hrs and commenced the Investigation.

After completion of an initial site examination the Inspectors interviewed a number of eyewitnesses to the accident. A secure cordon was maintained overnight at the wreckage site by An Garda Síochána.

The following morning, three Inspectors of Air Accidents returned to the site. They conducted a further examination and survey of the accident site. A number of other witnesses were interviewed. The wreckage was then recovered and transported to the AAIU wreckage and examination facility at Gormanston, Co. Meath, where further inspection is on-going.

2.2 Accident Site

The accident site was located in an agricultural field adjacent to the southern perimeter fence of the aerodrome (**Figure 1**). It was 130 metres south of the runway centreline and 280 metres from the displaced threshold of RWY 28 at EIAB.

The forward section of the aircraft, including the engine, propeller hub and blades, cowling, main undercarriage, main wing spar and instrument panel, were located at the impact site. The damage to the aircraft and the ground marks indicate that at the moment of impact the aircraft was in a near-vertical nose low attitude and that the right wing impacted the ground first. The remaining parts of the aircraft, consisting of the fuselage aft of the cockpit, the tail assembly, and wing components, were located in an area between seven and seventeen metres north east and east of the impact site. Initial indications from engine and propeller components examined at the site were that the engine was providing power at the time of impact. The Investigation will continue to analyse the evidence in order to determine the attitude of the aircraft at the moment of impact.

3. WEATHER INFORMATION

Met Éireann, the Irish Meteorological service, provided the Investigation with an aftercast for the Abbeyshrule area valid for 17.45 hrs on 20 March 2016. The aftercast reported winds from a northerly direction at 3-5 kts, an outside air temperature of 11 degrees Celsius and no significant weather or cloud cover in the vicinity of the aerodrome. The barometric pressure at mean sea level was 1027 hectoPascals.

4. RECORDED INFORMATION

4.1 Camera Equipment

During the initial examination of the accident site, two '*Go Pro Hero*' cameras were found; each containing a micro SD memory card. Both of the cameras suffered significant damage and a number of the components were separated from the devices. However, both micro SD memory cards appeared to be undamaged. Both cameras and their micro SD memory cards were secured and transported to the AAIU for further examination.

A preliminary examination of the micro SD memory cards indicated that the cameras had recorded data from the flight. Further examination indicated that one camera was mounted on the engine cowling facing aft and the other camera was mounted on the left wing-tip facing inboard. The cameras recorded the majority of the flight. However, the final file on each of the micro SD memory cards was not viewable. It is likely that the files were corrupted due to the interruption in power during the impact sequence. The AAIU is currently working to recover any additional data from the micro SD memory cards and camera units. Further analysis will be required in an effort to determine the various heights and speeds of the aircraft during the flight.

4.2 On Board Instruments

A *Becker BXP6401 Transponder* Unit was recovered at the accident site. Following discussion with the manufacturer it was determined that this unit did not contain data that would be of use to the Investigation.

A *Garmin GPS III Pilot* GPS[12] Unit was recovered from the aircraft. However, it was determined that the device contained no useful information, as data logging was not enabled.

An *EMS-D10 Engine Monitoring System* unit was installed in the cockpit. It incorporated a potential data logging capability. This instrument showed substantial external damage and the AAIU is working to establish if there is usable information contained within the device.

7 ### 4.3 Radar Data

The radar data for the period leading up to the time of the accident was impounded and retained by the Station Manager at Shannon Air Traffic Services for analysis by the Investigation. Previous experience suggests that aircraft in the vicinity of Abbeyshrule Aerodrome are unlikely to be visible on the controller's radar screen in Shannon unless the aircraft is at approximately 3,000 ft AMSL[13] or above. However, the Investigation will continue analysing the available data.

4.4 Documentation

The Investigation was provided with a substantial volume of documents associated with the manufacture, certification, airworthiness, operation and sale of the aircraft. Many of these documents, including the '*Flughandbuch*'[14], are the German and/or Dutch language versions only. Relevant sections of these documents will require translation as part of the Investigation.

5. ON-GOING INVESTIGATION

The Investigation is on-going and a Final Report will be published in due course.

- END -

[12] **GPS:** Global Positioning System.
[13] **AMSL:** Above Mean Sea Level.
[14] **Flughandbuch:** Flight Manual.

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

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