Air Accident Investigation Unit Ireland

INTERIM STATEMENT

ACCIDENT

Cessna 208B, G-KNYS

Near Clonbullogue, Co. Offaly

13 May 2018

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

Foreword

This Safety Investigation is exclusively of a technical nature and this Interim Statement details the progress of the Investigation.

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 (SI) 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 a safety investigation is the prevention of accidents and incidents.

Accordingly, AAIU Reports or Statements should not 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 Interim Statement 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.

This Interim Statement is based on information currently known to the Investigation and may contain errors. Any errors in this Interim Statement will be corrected in the Final Report.

[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.

INTERIM STATEMENT

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Accident to Cessna 208B, G-KNYS Near Clonbullogue, Co. Offaly on 13 May 2018

1 INTRODUCTION

The Cessna 208B aircraft took off from Runway (RWY) 27 at Clonbullogue Airfield (EICL), Co. Offaly at approximately 13.13 hrs UTC[4]. The occupants on board were the Pilot, who was seated in the left-hand cockpit seat, a passenger (a young child), who was seated in the right-hand cockpit seat, and 16 skydivers, who occupied two bench seats in the main cabin. When the aircraft was over EICL at an altitude of approximately 13,000 feet, the 16 skydivers exited from the aircraft as planned. As the aircraft was returning to the airfield, the Pilot advised airfield personnel by radio that he was on "*left base*[5]". No further radio transmissions were received. A short while later it was established that the aircraft had impacted in a forested area at Ballaghassan, Co. Offaly, which is approximately 2.5 nautical miles (NM) to the north-west of EICL. The aircraft was destroyed. The Pilot and passenger were fatally injured. There was no fire.

Three Inspectors of Air Accidents deployed to the accident site and an Investigation was commenced. A Preliminary Report (AAIU Report No. 2018-008) was issued on 11 June 2018, which set out factual information known at the time. A Final Report was not issued before the first anniversary of the accident, and therefore in accordance with Annex 13 to the Convention on International Civil Aviation (ICAO), Regulation (EU) No 996/2010 and the provisions of SI No. 460 of 2009 the following Interim Statement is issued.

2 PROGRESS REPORT

2.1 General

The purpose of this Interim Statement is to detail the progress of the Investigation. For completeness, this Interim Statement should be read in conjunction with the Preliminary Report.

In accordance with ICAO Annex 13, a number of agencies, both national and international are providing assistance to the Investigation, including: the Irish Aviation Authority (IAA); the Air Accidents Investigation Branch (AAIB) of the United Kingdom (UK); the UK Civil Aviation Authority (CAA); the National Transportation Safety Board (NTSB) of the United States (US); the US Federal Aviation Administration (FAA); the Transportation Safety Board (TSB) of Canada; and the Aircraft and Engine Manufacturers.

[4] **UTC**: Co-ordinated Universal Time. All timings in this Report are UTC; Local time was UTC + 1 hour.
[5] **Base:** The flight leg which precedes the approach leg and which is normally approximately perpendicular to the extended centreline of the runway. Left base requires a left turn onto the approach.

2.2 Personnel Information

The Pilot was a male, aged 47 years. He held a CPL(A)[6] which was initially issued by the UK CAA on 1 April 2010. The licence contained the following four ratings: Instrument, Cessna SET (Single Engine Turbine), MEP (Multi-Engine Piston) (land), and SEP (Single-Engine Piston) (land). The Pilot's Cessna SET rating was revalidated on 4 February 2017 following the completion of a Proficiency Check conducted by a CAA-approved Flight Examiner on that day. The rating was valid until 28 February 2019. Records indicate that on 4 May 2018, the Pilot underwent a Class 1 medical examination (required for a CPL) administered by a UK-based Aeromedical Examiner (AME). The Pilot's Class 2 Medical Certificate, required for the Pilot's PPL(A)[7], had an expiry date of 20 March 2019.

2.3 Wreckage Examination

2.3.1 Aircraft

On arrival at the accident site, the AAIU inspected the aircraft and the site. The impact was such that the entire front section of the aircraft, forward of the main wheels, was below the surface of a peat bog. On the accident aircraft type, this section is approximately 4.8 m in length.

All flight control surfaces were present. The aircraft's wings were almost fully detached at the wing roots. Due to the damage sustained to both wings, it was not possible to positively establish the position of the trailing edge flaps at the accident site. However, the observed position of the flaps' guide rollers in their tracks indicated some level of extension. Due to the nature and extent of the damage to the aircraft, it was not possible to verify the continuity of the flight control cables from the cockpit section to the wings. The cables in the tail section were inspected and were found to be intact. The engine and the propeller were also recovered from the accident site. Part of the propeller's reduction gearbox remained attached to the propeller hub. The aircraft wreckage was transported to the AAIU's facility in Gormanston, where the Investigation conducted a detailed examination. In addition, an examination of the wreckage was carried out by the aircraft Manufacturer under the supervision of the AAIU Investigator-in-Charge. An examination of the trailing edge flap actuator indicated that the flaps were at approximately 20^{o} extension at the time of the accident.

2.3.2 Engine

The aircraft was fitted with a single PWC PT6A-114A turboprop engine, driving a three-blade, variable-pitch propeller. The engine was disassembled and examined by the Investigation with the assistance of the engine manufacturer. There was no evidence of pre-impact anomalies observed on the examined engine components. Large amounts of organic debris (soil/peat) were found within the engine's compressor inlet and further along the gas path. This, in addition to the rotational signatures found on the compressor, compressor turbine, power turbine and adjacent static components, indicated that the engine was producing power at impact.

[6] **CPL(A):** Commercial Pilot Licence (Aeroplanes).
[7] **PPL(A):** Private Pilot Licence (Aeroplanes).

2.3.3 Propeller

The AAIU shipped the aircraft's propeller to the propeller manufacturer's facility in the United States for disassembly and examination. Representatives from the FAA oversaw the work on behalf of the NTSB and the AAIU. The propeller manufacturer noted that "*the propeller blade bending, twisting, paint scuffing, leading edge impacts, and overall propeller assembly damage is typical of that associated with mid-level rotational energy absorption (rotation with likely some engine power) at impac*t*".*

2.4 Recorded Data

2.4.1 Aircraft Data Acquisition System

The aircraft was fitted with an Aircraft Data Acquisition System (ADAS), comprising of a control/recording unit which receives data from various sensors.

According to the engine manufacturer, the ADAS unit provides "*an integrated aircraft data source and analysis tool for operators, maintenance personnel and fleet owners*". The unit also contains a "*built in flight data recorder to assist in accident/incident investigations*". However, it is not certified as crash-survivable. The ADAS unit from the accident aircraft was found at the site during recovery of the aircraft wreckage. It was damaged, but intact and was shipped to the engine manufacturer's Norwood facility in the USA on 15 May 2018 for examination in the presence of the FAA.

Following extensive preparatory work by the engine manufacturer, the unit was successfully downloaded on 23 May 2018. The ADAS unit contained data recorded over a period of more than 29 minutes. This included the final two minutes, approximately, of the previous flight and the entire accident flight (except for what appears to be the final one second approximately). Several parameters were recorded every 0.49 seconds, including Engine Inter-Turbine Temperature (ITT), Engine Torque, Engine Speed (Ng), Propeller Speed (Np), Fuel Flow (Wf), Airspeed and Altitude. The data indicates that the aircraft's rate of descent increased rapidly in the final few seconds, and that the engine was providing power to the propeller until the end of the data recording. Analysis of the ADAS data is ongoing.

2.4.2 Aircraft Avionics

The aircraft Manufacturer advised the Investigation that the other avionic units fitted to the aircraft did not have any flight data recording capability.

2.4.3 ATC Radar

Primary and secondary radar are used for ATC purposes. Primary radar functions by transmitting a radio signal and analysing the reflected signal from an object such as an aircraft, to establish the aircraft's distance and direction from the radar antenna. Secondary radar functions by interrogating the aircraft's transponder to determine additional information, such as the aircraft's registration and altitude.

ATC provided the Investigation with the radar data for the accident flight. The aircraft was not visible to radar for the entire accident flight, but for the period that it was visible, the data showed the aircraft's position, heading, ground speed, altitude and vertical speed (climb rate/descent rate). Analysis of the radar data, and the correlation of this data with the ADAS data, is ongoing.

2.4.4 Video Recordings

2.4.4.1 General

The Investigation obtained Closed Circuit Television (CCTV) recordings from several security cameras situated at a wind farm and a construction training facility located approximately 1.4 NM to the north-west of the accident site. In addition, several of the skydivers were wearing helmet cameras, which video-recorded their jumps. These recordings were also obtained by the Investigation.

2.4.4.2 CCTV Recordings

The accident aircraft was not visible in the CCTV recording obtained from the construction training facility. The video recorded by two cameras at the wind farm briefly showed the aircraft in flight in the distance. One of the cameras showed the aircraft for approximately 11 seconds. During the last 3.5 seconds of this period, the aircraft can be seen rapidly losing altitude, before it disappeared below a line of trees in what appeared to be a nose-down attitude. This recording was analysed with the assistance of the NTSB. The Investigation's review of this analysis and the correlation of results with the ATC and ADAS data is ongoing

2.4.4.3 Skydivers' Cameras

One of the helmet camera videos was recorded by a skydiver who was one of the last to exit the aircraft. The video, which was of approximately five minutes duration, showed the skydiver's entire jump, including exit from the aircraft, freefall, piloting of the canopy (parachute) and landing. Following the deployment of the skydiver's parachute, the skydiver, and hence the camera, mainly looked towards the landing zone at EICL, as the skydiver descended from the south, along a line approximately perpendicular to the runway. Approximately 30 seconds before landing, the skydiver briefly looked towards the north-west. When the camera was momentarily pointing in this direction, it recorded what appeared to be the accident aircraft for less than one second, as it descended into a line of trees in the distance, at a location consistent with the accident location. The skydiver only became aware of this content some days after the accident.

The videos recorded by the other skydivers show the aircraft as the skydivers were about to jump and also in the moments after they jumped. The aircraft's trailing flaps can be seen partially extended. The videos indicate that all flight controls were present and that the aircraft was flying normally at that time.

2.4.5 Portable Satellite Navigation System (GPS)

The Investigation noted that one of the skydivers' videos appeared to show a portable GPS navigation unit above the cockpit instrument panel in front of the Pilot. Such devices are usually capable of recording the aircraft's flight path. However, occasionally, recordings may not be available due to device settings or accident-related damage. As stated earlier, the impact was such that the entire front section of the aircraft was below the surface of a peat bog. Extensive excavation, using a mechanical digger, was required to facilitate recovery, resulting in the removal of a large volume of peaty soil.

The possible existence of a GPS navigation unit was not known at the time. However, all removed soil was '*graded*' by the digger, visually examined, and where necessary, searched by hand for aircraft debris during back-filling of the excavated hole. A GPS navigation unit was not found at the accident site or in subsequent examination of the aircraft wreckage.

2.4.6 Pilot's Mobile Phone

Certain mobile phone applications (Apps) designed for use by aircraft pilots, have the capability to log flight data. Such data could be useful from an accident investigation perspective.

The Pilot's mobile phone was recovered at the accident site. Due to the extent of the damage sustained by the phone as a result of the accident, it was sent to a UK-based data recovery specialist with the assistance of the UK AAIB. The data recovery specialist repaired the phone's motherboard and operating system. However, no data could be obtained from the device

2.5 Operational Aspects

Operational aspects under review by the Investigation include the following:

2.5.1 Aircraft Leasing

The UK-registered aircraft was leased for parachute operations and commenced operating at EICL on 21 April 2018. The UK-based Pilot arrived with the aircraft and the Pilot and aircraft operated each weekend at the EICL from 21 April 2018 until the date of the accident.

2.5.2 Legislative Requirements

Within the European Union (EU), aircraft operations for the purpose of transporting a skydiver or parachutist are subject to the requirements of Regulation (EU) No 965/2012. Such operations are classified as either Commercial Specialised Operations (Part SPO) (subject to the requirements of Annex VIII of 965/2012) or Non-Commercial Specialised Operations (Part NCO) (subject to the requirements of Annex VII of 965/2012). The requirements for each type of operation are different. A review of the legislation requirements regarding parachute operations is ongoing, in particular those requirements relating to the operation of the subject aircraft.

2.5.3 Carriage of Passengers on Aircraft Used for Parachute Operations

A passenger was on board the aircraft at the time of the accident. Interviews conducted by the Investigation indicate that the passenger had also been on board the aircraft on previous flights. The Investigation will review the legislation, guidance material and policies regarding the carriage of passengers on board aircraft being used for parachute operations.

3 ONGOING ACTIVITIES

The main areas of the Investigation include (but are not limited to) the following:

- The general operation of the aircraft and the analysis and correlation of all information.
- The lease of the aircraft and the piloting arrangements associated with the lease.
- The oversight of parachuting operations in Ireland.
- The carriage of a passenger on board an aircraft engaged in parachute operations.

The Investigation is ongoing and a Final Report will be published in due course.

- END -

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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