



# **Air Accident Investigation Unit Ireland**

**FACTUAL REPORT**

**SERIOUS INCIDENT**

**Embraer E175-200 STD, PH-EXI  
On Departure from Dublin Airport**

**19 October 2022**



**An Roinn Iompair**  
Department of Transport

## FINAL REPORT

### 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<sup>1</sup> to the Convention on International Civil Aviation, Regulation (EU) No 996/2010<sup>2</sup> and Statutory Instrument No. 460 of 2009<sup>3</sup>, 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.

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<sup>1</sup> **Annex 13:** International Civil Aviation Organization (ICAO), Annex 13, Aircraft Accident and Incident Investigation.

<sup>2</sup> **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.

<sup>3</sup> **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 No. 460 of 2009, the Chief Inspector of Air Accidents, on 19 October 2022, appointed John Owens as the Investigator-in-Charge assisted by John Darcy, an Inspector of Air Accidents, to carry out an Investigation into this Serious Incident and prepare a Report.

<b>Aircraft Type and Registration:</b>	Embraer E175-200 STD, PH-EXI
<b>No. and Type of Engines:</b>	2 x General Electric CF34-8E5
<b>Aircraft Serial Number:</b>	17000578
<b>Year of Manufacture:</b>	2016
<b>Date and Time (UTC)<sup>4</sup>:</b>	19 October 2022 @ 08:25 hrs
<b>Location:</b>	On departure from Dublin Airport (EIDW), Ireland
<b>Type of Operation:</b>	Commercial Air Transport
<b>Persons on Board:</b>	Crew – 4                                  Passengers – 37
<b>Injuries:</b>	Nil
<b>Nature of Damage:</b>	Nil
<b>Commander's Licence:</b>	Airline Transport Pilot Licence (ATPL) Aeroplane (A), issued by the Civil Aviation Authority (CAA) of The Netherlands
<b>Commander's Age:</b>	32 years
<b>Commander's Flying Experience:</b>	6,300 hours, of which 3,200 were on type
<b>Notification Source:</b>	Occurrence Report submitted by Dublin Air Traffic Services
<b>Information Source:</b>	AAIU Report Form submitted by the Pilot AAIU Correspondence Investigation

<sup>4</sup> **UTC:** Co-ordinated Universal Time. All times in this report are quoted in UTC unless otherwise stated; local time was UTC +1 hr on the date of the occurrence.

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## SYNOPSIS

Approximately three minutes after take-off from Dublin Airport (EIDW), Ireland, on a scheduled passenger flight to Amsterdam Airport Schiphol (EHAM), The Netherlands, the First Officer, who was the Pilot Flying, became incapacitated. The aircraft Commander took over all flying duties and requested assistance for the First Officer from the Cabin Attendants. He also transmitted a MAYDAY (state of emergency) to Dublin Air Traffic Control and requested clearance for the aircraft to return to EIDW, where a normal landing was performed. Medical assistance was provided to the First Officer on arrival. All passengers disembarked the aircraft normally. No injuries were reported to the Investigation.

## NOTIFICATION AND RESPONSE

Dublin Air Traffic Control (ATC) submitted a Safety Occurrence Report on the morning of the occurrence. The AAIU reviewed this report, contacted the Dublin Airport Duty Manager by telephone to obtain further details, and commenced an Investigation.

## 1. FACTUAL INFORMATION

### 1.1 History of the Flight

The Embraer E175 aircraft departed from Runway (RWY) 10R at EIDW at 08:22 hrs for Amsterdam. Approximately three minutes after take-off, when the aircraft was at FL100<sup>5</sup> and in Instrument Meteorological Conditions (IMC<sup>6</sup>), the First Officer (FO), who was the Pilot Flying (PF), indicated to the Commander that he was not feeling well, before collapsing in his seat. The autopilot was engaged at the time. The Commander stated that he immediately requested assistance from the Cabin Attendants (CA) by means of the emergency call button and by knocking on the cockpit door, and asked a CA to attend to the FO, while he focused on flying the aircraft. The CA secured the FO to his (the FO's) seat with the seat harness and moved the FO's seat rearwards, away from the flight controls. The FO regained consciousness, but the Commander determined that the FO, while stable, was unable to be part of an active cockpit crew. The CAs assisted the FO to don his crew oxygen mask. The Commander reported that the oxygen flow was selected to 100% and EMER<sup>7</sup> (emergency setting).

The Commander transmitted a MAYDAY call to ATC, advising that the First Officer was incapacitated, that the aircraft needed to return to Dublin, and that medical assistance was required on arrival. ATC facilitated an expeditious return and prioritised the aircraft as necessary. The Commander reported that he briefed himself for the approach and completed the necessary checklists. On the Commander's instruction, one of the CAs, using the Public Address (PA) system, informed the passengers that the aircraft had to return to Dublin and that the Commander would brief them further on landing. At approximately 1,000 feet (ft) on the approach, the Commander instructed the CAs to return to their stations. At around 100 ft, the aircraft encountered a flock of birds and sustained a bird strike to the left side of the nose section.

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<sup>5</sup> **FL100:** Flight Level 100 – a three-digit representation of aircraft altitude in increments of 100 feet (10,000 ft in this case) referenced to standard pressure (1013.2 Hectopascals).

<sup>6</sup> **IMC:** Instrument Meteorological Conditions – a flight category that describes weather conditions requiring pilots to fly primarily by reference to instruments, rather than with reference to visual cues.

<sup>7</sup> **EMER:** When the regulator knob is turned to EMERGENCY, pure oxygen under positive pressure is supplied to the mask.



The Commander reported that the weather deteriorated but was *'still sufficient for a CAT 1<sup>8</sup> approach'*. The aircraft landed on RWY 10R at EIDW at 08:40 hrs. The aircraft taxied behind a *'Follow Me'* vehicle to its parking stand, where a waiting ambulance crew assessed the FO. The passengers disembarked the aircraft normally.

## 1.2 Flight Crew Air Safety Report

The Flight Crew's Air Safety Report for the occurrence, as submitted to the Operator and provided to the AAIU, noted that they reported at 04:35 hrs at Amsterdam Schiphol, their home base, on the day of the occurrence. It was the Commander's first day of flight duty following three rest days. It was the first day of flight duty for the FO following the completion of his annual medical examination on the previous day. The Flight Crew described an uneventful flight from Amsterdam to Dublin, which involved some routine weather deviations in the Dublin area.

The Commander's report noted that on the return leg to Amsterdam (the occurrence flight), the aircraft taxied out as normal. The FO, who was the PF, briefed before the departure that he would engage the autopilot without delay after take-off due to low cloud and the possible need for weather avoidance manoeuvring. Following take-off from RWY 10R at EIDW, the after-take-off checklist was completed. During the climb, at FL100, the First Officer said that he was not feeling very well, before rapidly becoming incapacitated. The Commander attempted, unsuccessfully, to revive him by speaking loudly to him and shaking him by the shoulder. The Commander then requested the assistance of the CAs and declared a MAYDAY to ATC.

The Commander reported that following arrival on stand in Dublin, the waiting ambulance crew examined the FO, and the assessment of the cause of the incapacitation was that the FO had low blood pressure, a possible lack of water and food, in combination with a rising cabin altitude after departure.

## 1.3 Injuries to Persons

No injuries were reported to the Investigation.

## 1.4 Damage to Aircraft

There was no reported damage.

## 1.5 Personnel Information

### 1.5.1 Introduction

The four-person crew consisted of a Commander, a First Officer and two Cabin Attendants. Each pilot held a valid ATPL issued by the CAA of The Netherlands and a current first-class medical certificate. The Flight Crew's flying experience is outlined in **Table No. 1** and **Table No. 2** below.

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<sup>8</sup> **CAT 1:** A reference to an Instrument Landing System (ILS) approach, also known as a precision approach, which has a decision height or cloud ceiling height not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range not less than 550 m.

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## 1.5.2 Commander

The Commander's details are outlined in **Table No.1**.

<b>Age:</b>	32 years
<b>Licence:</b>	ATPL
<b>Medical</b>	Class 1 (issued 27 October 2021)
<b>Total all types:</b>	6,300 hours
<b>Total on type:</b>	3,200 hours
<b>Total on type P1:</b>	1,500 hours
<b>Last 90 days:</b>	150 hours (all on type)
<b>Last 28 days:</b>	45 hours (all on type)
<b>Last 24 hours:</b>	2 Hours (all on type)

**Table No. 1:** Commander's flying experience

## 1.5.3 First Officer

The First Officer's details are outlined in **Table No.2**.

<b>Age:</b>	35 years
<b>Licence:</b>	ATPL
<b>Medical</b>	Class 1 (issued 18 October 2022)
<b>Total all types:</b>	6,169 hours
<b>Total on type:</b>	3,430 hours
<b>Last 90 days:</b>	110 hours (all on type)
<b>Last 28 days:</b>	50 hours (all on type)
<b>Last 24 hours:</b>	1.5 Hours (all on type)

**Table No. 2:** First Officer's flying experience

## 1.6 Aircraft Information

The aircraft, an 88-seat Embraer E175-200 STD, is fitted with two General Electric CF34-8E5 turbofan engines. The aircraft is equipped with dual controls allowing the aircraft to be operated from either side. There is an observer's fold away seat, located behind the flight crew seats, which was unoccupied during this flight. The subject aircraft was manufactured in 2016. Its most recent Certificate of Airworthiness was issued by the Civil Aviation Authority of The Netherlands on 26 August 2016. The associated Airworthiness Review Certificate (ARC) was issued on 2 August 2022, and was valid until 25 August 2023.



## 1.7 Meteorological Information

*Met Éireann*, the Irish meteorological service, provided the METAR<sup>9</sup> for EIDW, which was issued at 08:30 hrs on the day of the occurrence:

*METAR EIDW 190830Z 10011KT 3000 RA BKN001 12/12 Q1019 BECMG BKN005=*

The meteorological conditions indicated by the METAR were wind 100 degrees at 11 kt, visibility 3,000 metres, rain, broken cloud at 100 ft, temperature/dew point 12 °C, MSL pressure (QNH) 1019 hPa, cloud becoming broken at 500 ft.

## 1.8 Operator's Emergency and Safety Procedures

Procedures for pilot incapacitation events are required because they can occur at any time and can result in the obstruction or inadvertent operation of an aircraft's flight controls. The Operator's Operations Manual Part A (OMA) prescribes the actions to be taken in the event of a pilot incapacitation. In addition to highlighting the need to maintain the aircraft on a safe flight path and using all automation available to assist in this, the procedure states that the flight crew may require the assistance of a CA to secure the seat and harness of the incapacitated flight crew member and administer oxygen if required. There is also instruction regarding the removal of the flight crew member from the flight deck. The OMA stated that the procedure *'should be regarded as general guidance and adapted as circumstances dictate'*. Instruction regarding whether a CA should remain on the flight deck or return to their station before landing is not included.

The Operator informed the Investigation that initial and recurrent training performed in the simulator includes the actions to be taken following pilot incapacitation and that pilot incapacitation is also discussed during briefings before and after simulator sessions.

## 1.9 Crew Resource Management

Crew Resource Management (CRM), which forms part of commercial aircraft crew training, seeks to optimise the use of all available resources, facilitating safe and effective operation of the aircraft. CRM procedures involve efficient crew co-ordination, effective communications, improved situational awareness, and conflict resolution techniques. CRM assists, among other things, in dealing with situations such as an unexpected incapacitation.

## 2. AAIU COMMENT

The incapacitation of the First Officer occurred with minimal warning shortly after take-off, which is a phase of flight that involves a high workload for the flight crew. In this case, the Commander acted quickly and utilised the assistance of a CA in dealing with the situation; this included securing the First Officer in his seat, moving his seat rearwards away from the controls, and administering oxygen. The Commander also delegated, to a CA, the task of keeping the passengers informed of the situation.

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<sup>9</sup> METAR: Meteorological Aerodrome Report.

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Due to the passenger capacity of the aircraft, only two CAs were required to be on board. Having a CA seated in the cockpit to render assistance if needed and monitor an incapacitated flight crew member could be helpful in cases such as the subject event. However, there is also a requirement for the aircraft's exits to be manned during landing. The Operator's OMA prescribes the actions to be taken in the event of a pilot incapacitation. Instruction regarding whether a CA should remain on the flight deck or return to their station before landing is not included. The OMA states that the procedure '*should be regarded as general guidance and adapted as circumstances dictate*'.

The instructions provided by ATC facilitated an expeditious return to Dublin. The bird strike that occurred on final approach, did not cause any further problems, although it had the potential to significantly further increase the workload for the remaining crew member.

- 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.**

Produced by the Air Accident Investigation Unit

AAIU Reports are available on the Unit website at [www.aaiu.ie](http://www.aaiu.ie)



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