



# **Air Accident Investigation Unit Ireland**

**FACTUAL REPORT**

**INCIDENT**

**Boeing 737-8AS, EI-EKB**

**En route Krakow - Edinburgh**

**9 March 2014**



**An Roinn Iompair  
Turasóireachta agus Spóirt**

Department of Transport,  
Tourism and Sport

## 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.

1

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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 460 of 2009, the Chief Inspector of Air Accidents on 22 May 2014, appointed Mr Thomas Moloney as the Investigator-in-Charge to carry out an Investigation into this serious incident and prepare a Report. Due to the retirement of Mr Moloney, Mr Kevin O’Ceallaigh, an Inspector of Air Accidents, was appointed to complete the publication of the Report.

<b>Aircraft Type and Registration:</b>	Boeing 737-8AS, EI-EKB	
<b>No. and Type of Engines:</b>	2 x CFM56-7B	
<b>Aircraft Serial Number:</b>	38494	
<b>Year of Manufacture:</b>	2010	
<b>Date and Time (UTC)<sup>4</sup>:</b>	9 March 2014 @ 19.00 hrs approximately	
<b>Location:</b>	En route Krakow, Poland to Edinburgh, Scotland	
<b>Type of Operation:</b>	Public Transport - Scheduled	
<b>Persons on Board:</b>	Crew - 6	Passengers - 172
<b>Injuries:</b>	Crew - 1	Passengers - Nil
<b>Nature of Damage:</b>	None	
<b>Commander’s Licence:</b>	ATPL <sup>5</sup> issued by the Irish Aviation Authority (IAA)	
<b>Commander’s Details:</b>	Male, aged 30 years	
<b>Commander’s Flying Experience:</b>	4,583 hours, of which 3,523 were on type	
<b>Notification Source:</b>	Air Safety Report submitted by the Operator	
<b>Information Source:</b>	AAIU Investigation, AAIU Report Form submitted by the Pilot	

<sup>4</sup> UTC: Co-ordinated Universal Time. All timings in this report are quoted in UTC.

<sup>5</sup> ATPL: Airline Transport Pilot Licence.

## FINAL REPORT

## SYNOPSIS

During a scheduled passenger flight from Krakow, Poland (EPKK) to Edinburgh, Scotland (EGPH) on 9 March 2014 a cabin crew member (CCM) reportedly fell in the galley area and injured his back. The CCM subsequently visited a doctor and following referral for an X-ray was diagnosed with a “*fracture of the transverse process of the right vertebra L1*”.

## NOTIFICATION

The event was initially reported to the Operator verbally on 18 March 2014, and formally notified on 1 April 2014. The occurrence was subsequently reported to the AAIU by the Operator through the IAA Safety Occurrence Tracking System (SOTS) on 11 April 2014. Following this, the AAIU requested further details from the Operator and subsequently opened an Investigation.

## 1. FACTUAL INFORMATION

### 1.1 History of the Flight

The aircraft was performing a scheduled passenger flight from EPKK to EGPB on 9 March 2014. It was reported that approximately 40 minutes prior to landing at EGPB, the No. 3 CCM fell while working in the rear galley. At the time, the No. 3 CCM along with the No. 2 CCM had been re-stowing a catering trolley following completion of the in-flight service. It was reported that during his fall, No. 3 CCM struck the metal frame of a cabin crew seat<sup>6</sup> and then fell onto the galley floor. The No. 2 CCM assisted the No. 3 CCM back onto his feet and he then continued working for the remainder of the flight.

Prior to landing at EGPB, the No. 2 CCM mentioned the fall to the No. 1 CCM who was the senior CCM. The No. 1 CCM asked the No. 3 CCM how he was feeling and whether he could continue his duties. The No. 3 CCM said that he was fine and that he would continue working. The No. 1 CCM stated that consequently he did not mention the event to the Commander. The aircraft landed in EGPB, turned around in accordance with the usual procedures and then flew back to its home base in EPKK with the four CCMs continuing to work normally. On arrival back in EPKK, they completed their duties for the day. The Commander was unaware of the No. 3 CCM's fall until a number of weeks later.

### 1.2 Subsequent Events

The No. 3 CCM subsequently reported that, after his fall, he had experienced some pain while breathing and that he had taken some pain killers during the turn round in EGPB. He stated that in the course of the return flight he had a “*strong pain*” in his back. He said that he continued to suffer pain when he got home and, on the day following his fall, he visited a doctor to make an appointment for the following week. The No. 3 CCM had been rostered on standby for the two days following his fall and he was not called in for duty. He then had three days rostered off duty followed by five days annual leave. During this period he travelled to Malta on holidays. He stated that while there, he continued to feel unwell and started to cough up some blood.

<sup>6</sup> **Cabin crew seat:** A seat used by crew during the take-off and landing phases but which can be folded and stowed in a vertical position to improve crew access to the galley area during the flight.



He returned to Krakow, where he was based, and attended the doctor's appointment that he had previously booked. The doctor referred the No. 3 CCM to hospital and he was admitted on 18 March 2014. On that date the CCM informed his Base Supervisor of the event and that he had been admitted to hospital. Following an X-ray he was diagnosed as having a *"Fracture of transverse process of the right vertebra L1"*<sup>7</sup> (see **Section 1.3 Medical Information**). He remained in hospital for seven days. Following his discharge from hospital he recuperated at home for several more days. He returned to duty on 30 March 2014.

Each of the four CCMs filed a medical report with the Operator on 1 April 2014. Three of the reports mentioned that the CCM's fall had occurred during *"turbulence"*. The Investigation requested the SCAAI<sup>8</sup> of Poland to interview the Krakow-based CCMs to clarify the circumstances. The SCAAI made contact with the No. 1 CCM and No. 2 CCM. The No. 1 CCM stated that he did not feel turbulence during the flight, but *"only a light bump"*. He did not witness the reported fall of the No. 3 CCM. He stated that he had subsequently spoken with the No. 3 CCM who told him that he (the No. 3 CCM) was able to continue his duty and that this was the reason that the No. 1 CCM did not inform the Commander.

The No. 2 CCM stated that the event took place about 40 minutes before landing. She said that there was no turbulence and that the seat belt sign was not required to be *"on"*. She stated that she was in the rear galley with the No. 3 CCM putting away the trolley and other equipment after completion of the in-flight service and that *"The No. 3 probably lost his balance because of a short bump and slipped back on a bit of wet (from ice) on the floor"*. She said it was just a bad coincidence for him, everyone else was fine. She assisted him to get up and said that in her opinion *"he was fine, just a bit in pain"*. She stated that she had informed the No. 1 CCM but that as the No. 3 CCM had said he was fine, the No. 1 CCM decided that there was no need to inform the Commander. She said that the No. 3 CCM continued working and did not complain of anything during the rest of the duty period.

The Commander, in a report forwarded to the AAIU, stated that *"At no point in time, during the flight, during the turn around, during the return flight or during the following month was any information presented to the flight crew on this incident. The first time I was informed about this was at the end of April. I do not believe these injuries occurred on board the aircraft"*.

### 1.3 Medical Information

The CCM was diagnosed with a *"fracture of transverse process of the right vertebra L1"*. The Investigation sought general medical information from an aeromedical examiner (AME) regarding such an injury. The Investigation did not access the CCM's personal medical information.

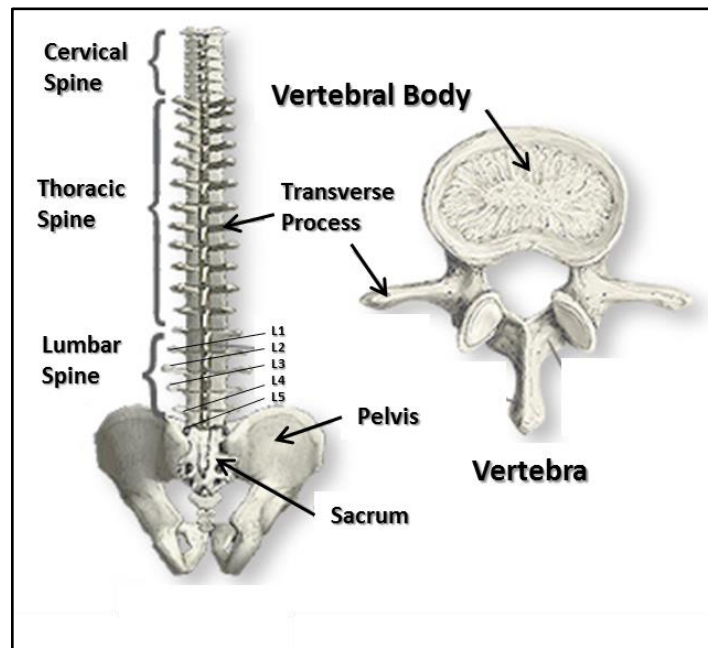
The AME stated that the spine is divided into the cervical, thoracic and lumbar regions (**Figure No. 1**). The vertebrae are then named by attaching a prefix based on the location of the bone; 'C' for cervical vertebrae, 'T' for thoracic vertebrae and 'L' for lumbar vertebrae. There are five lumbar vertebrae, named L1 – L5 respectively. The L1 vertebra is the first lumbar vertebra below the thoracic region.

<sup>7</sup> Diagnosis as stated on the Medical Certificate submitted to the Operator by CCM No. 3.

<sup>8</sup> SCAAI: State Commission on Aircraft Accidents Investigation (Poland).

## FINAL REPORT

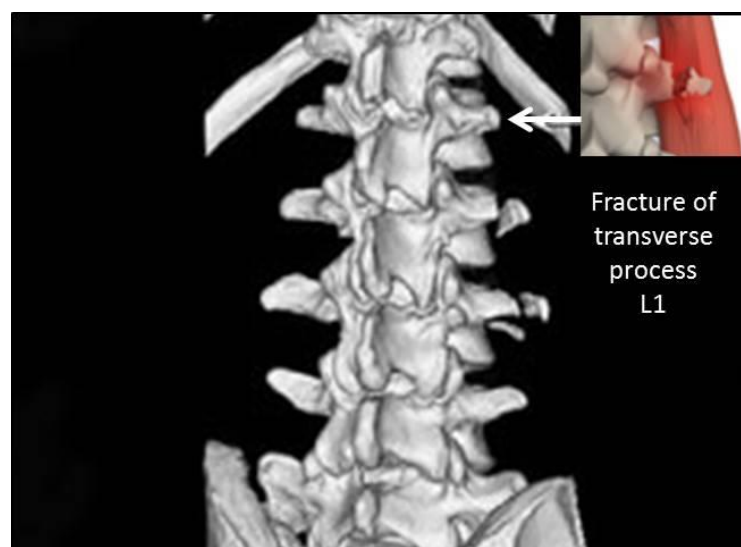
The 'transverse process' is part of the spine and extends both left and right from the central (vertebral) column of the spine. The main purpose of the transverse process is to serve as attachment points for spinal ligaments and muscles and to help to support the spinal canal.



**Figure No. 1:** Spinal Column (*helpyourback.org*)

A transverse process fracture is a rare injury. It can result from a direct impact to the process, although this is unusual due to the amount of surrounding muscle tissue. It can also result from a side bending or twisting motion. It requires a lot of force to cause this fracture. Due to their proximity to the transverse process, other muscles or organs such as the lungs, liver, kidney or spleen can be injured at the time of the fracture resulting in internal bleeding (**Figure No. 2**). The most common causes of a fracture of the transverse process are due to extreme rotation or lateral bending during a significant fall, a vehicular accident or recreational and sporting activities. This fracture does not normally affect the stability of the spine. The AME informed the Investigation that a patient with a fracture of the transverse process will have severe pain even if the actual break is small or limited and there is no injury to nearby bones, organs, or the spinal cord.

5



**Figure No. 2:** Lumbar Transverse Process Fracture (*mddirect.org*)



## 1.4 Recorded Data

The Operator was unaware of the event for three weeks after it had occurred, by which time data from the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) had been overwritten. However, data was available from the Operational Flight Data Monitoring (OFDM) system and was provided to the Investigation by the Operator. This data showed no evidence of an encounter with significant turbulence during the subject flight. At a point approximately 41 minutes before landing, the data showed a minor disturbance with a maximum recorded vertical acceleration of 1.11 g and a maximum recorded lateral acceleration of 0.033 g (**Figure No. 3**). It is possible that this disturbance was the “light bump” or “short bump” described by the No. 1 and No. 2 CCMs.

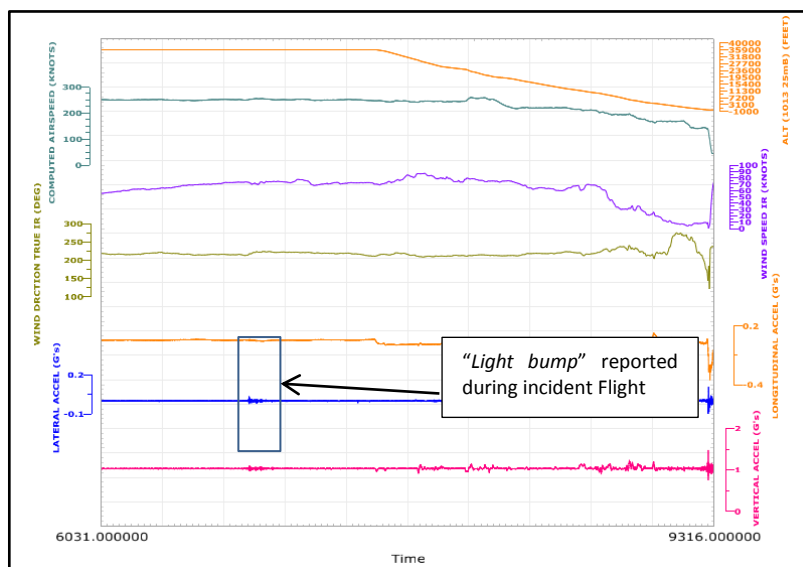


Figure No. 3: OFDM accelerations recorded during incident flight

## 1.5 CCM Training

The Operator provided the Investigation with the training records for the No. 3 CCM. He successfully completed a basic cabin crew examination on 27 January 2011 and a Boeing 737 conversion examination on 16 February 2011; his most recent line check had been passed on 31 August 2013. The CCM completed a recurrent training course comprising Security, Dangerous Goods and Crew Resource Management (CRM) on 15 October 2013. Finally, the No. 3 CCM completed a cabin crew triennial training course on 21 October 2013.

## 1.6 Safety Actions

Following an internal investigation, the Operator issued four recommendations to management, all of which were accepted. These recommendations were as follows:-

1. Consider all crew to attend CRM training.
2. Consider the issue of a memo to all cabin crew reminding them that all incidents must be reported through the Operator's internal safety network on the day of the incident, giving accurate information.
3. Consider issuing of a memo to cabin crew reminding them to report any incident that occurs in the cabin to the Commander.
4. Consider issuing of a memo to all cabin crew reminding them that the ice box must be emptied of any excess water prior to landing on each sector.

## FINAL REPORT

## 2. AAIU COMMENT

- 2.1 The CCM stated that the injury occurred on 9 March 2014 on the flight from EPKK to EGPB and that it was not reported to the aircraft Commander. The other CCM's stated that the CCM told them that "*he was fine just a bit in pain*". The CCM functioned as a member of crew for the return flight to EPKK without incident. This was the last sector of that day's flight duty. Following this, the CCM was on standby at home for two days followed by a total of eight days free of duty which included a foreign holiday. Subsequent to this 10 day period the CCM visited a doctor complaining of chest and back pain and coughing up some blood. The doctor requested an X-ray which revealed a fracture of the transverse process of the right vertebra L1.

An AME informed the Investigation that, in general, a fracture of this nature with the associated coughing up of blood as reported by the CCM, would cause significant discomfort to the patient and that in the opinion of the AME it would be difficult for a patient to continue routine physical functionality over an extended period.

At no point during the flight or prior to completion of the duty did any member of the cabin crew report the fall or injury to the Commander. Although the injury seemed minor and was reported as such by the CCM to his colleagues, it would be considered good practice in crew resource management to report it to the Commander. It also prevented the Operator from obtaining further information at the time of the occurrence to determine the nature and extent of the injury. The interval between the incident flight and the reporting of this occurrence to the Operator meant that any form of contemporaneous information that could have been gathered / recorded (such as the CVR/FDR data or a medical examination) were unavailable to the Investigation. The OFDM data indicated a maximum vertical acceleration of 1.11 g and a lateral acceleration of 0.033 g which would not be considered indicative of turbulent conditions.

The Investigation received a medical report stating that CCM No. 3 had suffered a "*fracture of transverse process of the right vertebra L1*", which by Annex 13 definition is a serious injury. However, considering the information available to the Investigation and the time-lag between the occurrence and the medical diagnosis, it is not possible to say conclusively what circumstances resulted in this injury. Consequently the Investigation has classified this occurrence as an Incident.

The Investigation notes the recommendations made by the Operator's internal investigation and further notes that the Operator has accepted these recommendations.

-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](http://www.aaiu.ie)



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