



# Air Accident Investigation Unit Ireland

FACTUAL REPORT  
SERIOUS INCIDENT

Boeing 737-8AS, EI-EFF  
Boeing 737-8AS, EI-DHA

Dublin Airport  
8 March 2015



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> of the European Parliament and the Council, 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> **ICAO Annex 13:** International Civil Aviation Organization, Annex 13 to the Convention on International Civil Aviation, Air 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.

## FINAL REPORT

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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 20 March 2015, appointed Mr Leo Murray as the Investigator-in-Charge to carry out an Investigation into this Serious Incident and prepare a Report.

<b>Aircraft Type and Registration:</b>	(1) Boeing 737-8AS, EI-EFF (2) Boeing 737-8AS, EI-DHA
<b>No. and Type of Engines:</b>	(1) 2 x CFM 56-7B26 (2) 2 x CFM 56-7B26
<b>Aircraft Serial Number:</b>	(1) 35016 (2) 33571
<b>Year of Manufacture:</b>	(1) 2009 (2) 2005
<b>Date and Time (UTC)<sup>4</sup>:</b>	8 March 2015 @ 21.56 hrs
<b>Location:</b>	Dublin Airport (EIDW)
<b>Type of Operation:</b>	(1) Public Transport - Scheduled (2) Public Transport - Scheduled
<b>Persons on Board:</b>	(1) Crew - 6 Passengers - 179 (2) Crew - 6 Passengers - 135
<b>Injuries:</b>	Nil
<b>Nature of Damage:</b>	None
<b>Commander's Licence:</b>	(1) Airline Transport Pilot Licence (Aeroplanes) (2) Airline Transport Pilot Licence (Aeroplanes)
<b>Commander's Details:</b>	(1) Male, aged 41 years (2) Male, aged 54 years
<b>Commander's Flying Experience:</b>	(1) 10,000+ hours, experience on type unknown (2) 17,550 hours, of which 6,970 were on type
<b>Notification Source:</b>	Irish Aviation Authority (IAA) through the Safety Occurrence Tracking System (SOTS)
<b>Information Source:</b>	AAIU Report Forms submitted by both Commanders and statement from the Air Traffic Control Officer (ATCO)

<sup>4</sup> UTC: Coordinated Universal Time. All times in this Report are in UTC, equivalent to local time on 8 March 2015.

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### SYNOPSIS

On the evening of 8 March 2015, the Air Movements Controller (AMC) at Dublin Airport (EIDW) reported a loss of separation between a departing and a landing aircraft.

The departing aircraft (EI-EFF, using 'callsign 342') was cleared for take-off with a landing aircraft (EI-DHA, using 'callsign 45TR') at 3.2 NM on final approach to the same runway. Re-appraising the situation, the AMC attempted to stop the departing aircraft at the holding point, however, as a result of a blocked transmission the departing aircraft continued past the stop line which was in accordance with its previously issued clearance. Clearing the departing aircraft for an immediate take-off, the departing aircraft became airborne prior to the arriving aircraft touching down.

A runway occupation alert, a function of the Advanced Surface Movements Guidance and Control System (A-SMGCS), activated as a result of the reduced separation between the aircraft during the event.

## 1. FACTUAL INFORMATION

### 1.1 History of the Flight

The incident occurred at 21.56 hrs under conditions of darkness. Due to a high volume of inbound traffic, the spacing between arrivals was decreased and increased coordination was necessary between the Air Movements Controller (AMC) and the Approach Controller (APP). Runway (RWY) 28 was the active runway for both departing and arriving traffic.

The departing aircraft, '[callsign] 342', was operating a scheduled passenger service from EIDW to Luton (EGGW). Following pushback, the aircraft was cleared to taxi to RWY 28 via Taxiways (TWYs) F3, F2 and E1. When the aircraft was on TWY F3 the Air Movements Controller (AMC) planned to depart this traffic before inbound traffic '[callsign] 45TR' at six nautical miles (NM) was cleared to land.

While on TWY F3, EI-EFF came under the control of the AMC. The AMC asked EI-EFF to confirm if they would be ready for departure on reaching the runway. The Flight Crew of EI-EFF replied in the affirmative. The AMC requested a 'good taxi speed if possible' and instructed EI-EFF to hold short of the runway initially and advised that landing traffic was currently at six miles.

With EI-EFF now entering TWY E1 and the landing traffic at 3.5 NM, the AMC asked EI-EFF if they would be ready for 'an immediate rolling departure'. The reply from EI-EFF was indistinct with the word 'negative' but was understood by the AMC as an affirmative reply. The AMC accordingly switched off the TWY E1 stop bar and instructed the aircraft to line up and take-off on RWY 28. Co-incident with acknowledging this clearance for take-off, the Flight Crew of EI-EFF received the 'cabin secure' signal and replied 'Cleared for immediate take-off.....eh affirm [callsign] 342 cleared for line up take-off we'll expedite'.

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The A-SMGCS recording showed that after completing the turn on to TWY E1, and stating that they would expedite, EI-EFF slowed to 5 kts. The AMC did not expect EI-EFF to slow its taxi speed to such a degree and transmitted '[Callsign] 342 actually, can you hold short runway 28 please' as the aircraft approached the stop bar which was now not illuminated. This transmission crossed with another transmission and was not acknowledged by EI-EFF which continued to enter RWY 28. EI-EFF then requested confirmation of its take-off clearance which was confirmed by the AMC using the word 'immediate'.

The landing aircraft (EI-DHA) was advised of the departing traffic and to expect a late landing clearance. The A-SMGCS RIMCAS<sup>5</sup> activated at 21.56:21 hrs with aural and visual alerts to the AMC. Data provided by the Operator's FDM<sup>6</sup> shows that the departing aircraft became airborne prior to the landing aircraft touching down. At their closest point the aircraft were 807 metres apart; however the rate of closure was low. At this point, EI-EFF was past the intersection at TWY E5 accelerating past a speed of 138 kts, EI-DHA was approaching TWY E3 at 146 kts and decelerating (**Graphic No. 1**).



**Graphic No. 1:** Captured A-SMGCS image showing EI-EFF (Callsign 342) and EI-DHA (Callsign 45TR) at their closest point (807 m).

(AAIU Note: a number of taxiway identifier labels have been re-positioned for clarity)

### 1.2.1 Air Traffic Control Officer (ATCO)

The ATCO Expert performing the duties of the AMC position was appropriately rated and licenced. The AMC was on his first shift in the roster cycle having reported for duty at 13.15 hrs. At the time of the event he was in position for approximately 25 minutes following a break. When interviewed by the Investigation he stated that the traffic level at that time was 'pretty constant and was about to build up'.

<sup>5</sup> RIMCAS: Runway Inursion Monitoring and Conflict Alerting System.

<sup>6</sup> FDM: Flight Data Monitoring.

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The ATCO's plan was to identify a suitable gap in the arriving sequence to facilitate the departure of EI-EFF. When he first queried if the crew would be 'ready on reaching' the crew replied in the affirmative. With the landing aircraft at 3.5 NM and EI-EFF on TWY F1, the ATCO again confirmed if the departing aircraft was ready for an '*immediate rolling departure*'.

He thought the reply was affirmative and '*didn't hear anything else*', so he cleared the departing aircraft to line up and take-off and gave the surface wind conditions. He remarked that if he had clearly heard a '*negative*' in response he would have instructed a 'stop' at the stop-bar without hesitation.

The ATCO stated that when turning onto TWY E1 '*he seemed to slow down*'. This caught the ATCO by surprise, as the Flight Crew were asked to keep a good taxi speed to facilitate the departure sequence. The ATCO considered the separation with the landing aircraft and reviewing his plan, instructed EI-EFF to hold short of the runway. With this transmission not acknowledged and EI-EFF now past the stop line, the ATCO judged that with the landing traffic at 2.3 miles there was still sufficient gap. The AMC was aware of the reducing separation when the A-SMGCS activated and, assessing the position and speed of both aircraft, deemed it safer at that point to let EI-DHA continue and land rather than instruct it to carry out a go-around.

### 1.2.2 Commander EI-EFF

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The Commander of EI-EFF held a European Union Airline Transport Pilot Licence (Aeroplanes) with appropriate ratings together with a Class One Medical Certificate valid until 27 March 2016. The Commander of EI-EFF completed an AAIU Report Form which was forwarded to the Investigation. The following is his narrative of the Incident:

*'During taxi on taxiway Foxtrot to our taxi clearance limit E1, to hold short RWY 28/34, tower asked if we were ready for an immediate departure to which the First Officer replied negative (as the #1 had not yet given cabin secure). In response to our transmission of 'negative' tower instructed us to line up and cleared for an immediate take-off. As the take-off clearance was being transmitted to us by the Tower, we simultaneously got the cabin secure chime. At this point we were approaching the E1 holding point so to eliminate any doubt I asked the First Officer to confirm with the Tower that we were still cleared for take-off, of which the Tower confirmed this and again gave a line up and cleared immediate take-off clearance. We proceeded to enter the active runway and continued with the departure.'*

### 1.2.3 Commander EI-DHA

The Commander of EI-DHA held a Joint Aviation Authorities (JAR) Airline Transport Pilot Licence (Aeroplanes) with appropriate ratings together with a Class One Medical Certificate valid until 27 March 2016. The Commander of EI-DHA completed an AAIU Report Form which was forwarded to the Investigation.

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The following is his narrative of the Incident:

*'During the approach ILS rwy 28 DUB with good visibility above 10Kms with light wind from the west, Captain as PF and PO as PM. Establish on final number 2 for landing and one departure before our landing we selected G/D flaps 15 by 4NM and flaps 30 before 1000ft. ATC cleared a departure AFT to line up and take off, at 500ft call the AFT was just approaching the holding point E1 and I realised that. [It] will be tight the lining up AFT was slow and still far away from the take off. We discuss with the Fo and the GA possibility and the [threat] associated. We receive the landing clearance on very short final around the threshold runway, the departing AFT just airborne. We got some turbulences during the flare, float a bit, and did a normal landing and vacate E6. The controller told us thanks for the approach.'*

### 2. AAIU Comment

Good communications are essential to the safe and orderly flow of air traffic. With traffic levels building up at that particular time of the evening, increased coordination was necessary between the Air Movements Controller and the Approach Controller in order to identify gaps for departing traffic.

When EI-EFF came on the AMC's frequency, the Flight Crew of EI-EFF confirmed that they would be ready on reaching the runway. Based on the length of time for taxi and present location, the Flight Crew reasonably anticipated they would be ready on reaching the runway. As a consequence, the AMC requested that a good taxi speed be maintained, if possible, with the departing aircraft being advised of the traffic on approach. The crew of EI-EFF could only be ready provided that they received a 'cabin secure' signal before take-off, which they had not received at that time. Making this known to the AMC would have provided the AMC with additional information and the sequence he was planning may have been revised accordingly.

With the departing aircraft on TWY E1, the AMC enquired if they were ready for an immediate rolling departure. The reply from the crew of EI-EFF was clipped and indistinct. Replay of the ATC recording confirms that the reply was 'negative' but was understood by the AMC as an 'affirmative' reply which would have been consistent with the reply he had heard earlier. While the negative reply to the enquiry was made, again it was not made clear to the AMC that the 'cabin secure' signal had not yet received and consequently it was not possible to depart expeditiously.

Although requested to keep a good taxi speed, the departing aircraft slowed to 5 kts following its turn onto TWY E1. This was not expected by the AMC and prompted him to reconsider his plan for the departure/arrival sequence, consequently he requested EI-EFF to hold short. However, this transmission from the AMC was crossed by a simultaneous transmission; the source of the simultaneous transmission could not be determined as no other aircraft or vehicle made a call subsequently. While in the process of reading back the clearance for an 'immediate take-off' the crew of EI-EFF received the 'cabin secure' chime. The option to illuminate the TWY E1 stop bar as the aircraft approached was not taken by the AMC.

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In order to plan efficient and safe sequencing of arrivals and departures on a single runway operation, ATC need to be able to anticipate the 'readiness state' of aircraft taxiing for departure. However, ATC should be aware that it may be difficult for flight crews to know early in the taxi 'if they will be ready on reaching'; as often the flight crew will not have received confirmation (intercom or chime) of the cabin being secured.

Subsequent to this incident, the IAA installed a 'Time to Touchdown' facility (TTT) for the Tower Controller (AMC) which displays the time to touchdown of the next aircraft on final approach. Associated Air Traffic Control procedures have been developed, safety assessed and implemented and the use of TTT should greatly reduce the risk of the event occurring in the future.

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## Appendix A

## Certified Transcript of Dublin tower (118.600 MHz) on 8 March 2015

(Operator's IATA flight prefix denoted by #)

Time:	Source:	Transcript [Remarks]:
21.54:17	AMC	'[callsign] 342 good evening, Echo 1 and confirm you will be ready on reaching?'
21.54:21	# 342	'Affirm [callsign] 342.'
21.54:23	AMC	'Roger good taxi speed if possible and eh Echo 1 hold short initially but I should be able to get you going, company at six miles at the moment.'
21.54:32	# 342	'Okay hold echo one [callsign] 342.'
21.54:35	# 45TR	'Tower good day [callsign] 45TR ILS two eight, five and a half miles.'
21.54:39	AMC	'[callsign] 45TR good evening number one surface wind one nine zero degrees four knots continue.'
21.54:43	# 45TR	'Continue [callsign] 45TR.'
21.55:02	AMC	'Shamrock 40W vacate right, Echo six, right on to the Bravos contact ground one two one decimal eight.'
21.55:08	EIN40W	'Echo six, Bravos, one two one eight, Shamrock 40W thanks.'
21.55:15	AMC	'[Callsign] 342 are you ready for an immediate rolling departure?'
21.55:20		<b>[clipped]</b> ...negative [callsign] 342.'
21.55:24	AMC	'[callsign] 342 cleared enter, line up, take-off two eight, surface wind one nine zero degrees, four knots.'
21.55:30	# 342	'Cleared for immediate take off, [pause], eh, affirm [callsign] 342 cleared for line up, take-off, we'll expedite.'
21.55:40	AMC	'[callsign] 342 actually can you hold short runway two eight please.'
21.55:42		<b>[crossed transmissions on frequency]</b>
21.55:45	[unknown]	'blocked'
21.55:51	# 342	'[callsign] 342 just confirm we are cleared take off?'
21.55:56	AMC	'[callsign] 342 immediate take off runway two eight, surface wind one nine zero degrees, four knots continue.'
21.55:59	# 342	'Immediate take off [callsign] 342.'
21.56:03	AMC	'[callsign] 45TR company traffic taking it on the roll expect a late landing clearance, surface wind one nine zero degrees, four knots'
21.56:09	# 45TR	'Copied that 45TR.'
21.56:18	# 342	'[callsign] 342 rolling.'
21.56:20	AMC	'Roger Sir.'
		<b>[A-SMGCS RIM audio and visual alert]</b>
21.56:30	AMC	'[callsign] 45TR I'll have it for you shortly, surface wind one nine zero degrees, four knots.'
21.56:35	# 45TR	'Roger'.
21.56:41	AMC	'[callsign] 45TR thank you, cleared to land surface wind one nine zero degrees, four knots.'
21.56:46	# 45TR	'Cleared land [callsign] 45TR.'
		<b>[end of transcript]</b>

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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