Air Accident Investigation Unit Ireland

INCIDENT REPORT
Boeing 737-8AS, EI-EBE, Cork Airport, Ireland 22 July 2009

Department of Transport
Tourism and Sport
An Roinn Iompair
Turasóireachta Agus Spóirt

AAIU Report No: 2011-006
State File No: IRL00909060
Published: 27/04/2011

In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Air Accidents, on 22 July 2009, appointed Mr. Leo Murray as the Investigator-in-Charge to carry out a Field Investigation into this Incident and prepare a Final Report. The sole purpose of this Investigation is the prevention of aviation Accidents and Incidents. It is not the purpose of the Investigation to apportion blame or liability.

Aircraft Type and Registration:	Boeing 737-8AS, EI-EBE
No. and Type of Engines:	2 x CFM 56-7B
Aircraft Serial Number:	37523
Year of Manufacture:	2009
Date and Time (UTC[1]):	22 July 2009 @ 09.21 hrs
Location:	Cork Airport (EICK)
Type of Flight:	Public Transport
Persons on Board:	Crew - 6 Passengers - 164
INJURIES:	Crew - Nil Passengers - Nil
Nature of Damage:	None
Commander's Licence:	JAA Airline Transport Pilot Licence
Notification Source:	Irish Aviation Authority (IAA) and the Operator
Information Source:	AAIU Field Investigation

1 **UTC**: Co-ordinated Universal Time, equivalent to local summer time minus 1 hour.

SYNOPSIS

An Operations vehicle (Police 1) was stopped on Runway (RWY) 17 at EICK, holding short of the intersecting runway, while a light aircraft conducting local training carried out a touch and go. At 09.21 hrs a commercial transport flight, (Boeing 737) was cleared for take-off on RWY 17. On becoming aware that the B737 was accelerating for take-off, the driver of Police 1 vacated right onto RWY 25 at the intersection. During the take-off roll, as the aircraft approached 90 knots, the Commander noticed the vehicle vacating onto the intersecting runway. With the vehicle clear, the take-off was continued. It was estimated that the aircraft and vehicle were approximately 700 m apart prior to the resolution of the conflict.

1. FACTUAL INFORMATION

1.1 History of the Event

At 09.13:01 hrs, the B737 requested push back and start clearance with Cork Ground on frequency 121.850 MHz. Shortly after this exchange, an operations vehicle callsign 'Electrician 1' requested clearance to proceed to the threshold of RWY 17 with a return to the stopbar on Taxiway A. Electrician 1 was cleared to enter RWY 17 to carry out work as requested. At this time, a light aircraft which was engaged on a circuit detail on RWY 17, was switched to RWY 25 to cater for the departing B737 traffic.

At 09.13:41 hrs, a second operations vehicle callsign 'Police 1' requested permission to enter RWY 17 for a runway inspection with the intention of proceeding to the RWY 07 touchdown point. Police 1 was cleared to enter RWY 17 and proceed with the inspection but to hold short of RWY 07-25 due to the light aircraft. At 09.15:36 hrs, a second light aircraft, situated at the Aero Club apron, called Cork Ground for start clearance. This exchange was followed by another commercial flight (an ATR 72) requesting permission to start.

With the B737 due to taxi for departure, Electrician 1 was recalled to the ramp, confirming the runway vacated at 09.18:16 hrs. The departing B737 contacted Cork Tower at 09.19:23 hrs and was instructed to line up and wait, receiving take-off clearance on RWY 17 at 09.20:34. Sixteen seconds later Police 1 vacated the main runway onto RWY 07, and communicated this to the Tower Controller.

1.2 ATC Aspects

1.2.1 General

The incident was the subject of an internal IAA investigation, which was made available to the AAIU including a transcript of Radiotelephony (R/T) exchanges. At the time of the incident, the B737 was communicating with Cork Tower frequency of 119.300 MHz. The Police 1 vehicle, also operating on the runway, was communicating with the tower on the Cork Ground frequency of 121.850 MHz. The vehicle used by Police 1 was a white coloured saloon type car equipped with an amber rotating beacon.

1.2.2 Surface Movements Controller (SMC)

The SMC had commenced duty at 06.30 hrs and covered both the Ground and Tower positions as a combined duty until the arrival of his colleague at 08.50 hrs. During this time he received a family-related personal telephone call. The Investigation understands that the nature of this telephone call was distressing.

Approximately 15 minutes before the incident the SMC requested to take a relief break. He was not present in the Tower at the time of the incident but returned to the tower immediately when requested to do so.

1.2.3 Air Movements Controller (AMC)

The ATCO[2] carrying out the AMC duties gave a full and detailed account to the Investigation. The AMC commenced duty at 08.50 hrs. When the SMC requested a relief break, the AMC considered the traffic situation and decided that it was suitable for single person operation and granted permission for the SMC to take a break. A relief SMC rated ATCO was involved with duties in the general office at the time and was available if required. At the time of the occurrence, there were two items of commercial traffic preparing for departure; one light aircraft airborne and a second holding on the secondary runway, and two operations vehicles both on the manoeuvring area.

The AMC stated that the Police 1 vehicle was holding to the north of the runway intersection but was not easily visible from the tower, and it had been some 3-4 minutes since this vehicle had any communication with the Tower. With the light aircraft from the Aero Club apron now clear on RWY 25, the AMC scanned the main runway again but again did not observe the stationary Police 1 vehicle. With Electrician 1 back on the ramp the 'Runway Occupied' strip holder was removed from the active flight progress board and the B737 was cleared for take-off. As the traffic started its take-off roll, Police 1 called to say he was vacating onto RWY 07. The AMC observed the vehicle now clear of RWY 17 and allowed the B737 to continue with its take-off. Immediately following the incident, the SMC was recalled to the tower. In accordance with procedures, he then relieved the AMC and covered both SMC and AMC positions until the ATCO on duty in the general office came to assist. The incident was reported without delay by telephone to the Operations Manager and through a Mandatory Occurrence Report.

The AMC also stated that the Police 1 vehicle was difficult to see in wet conditions due to its low profile, white colouring and rain on the tower windows. Direct sight of the vehicle may also have been obscured by one of the pillars of the tower cab.

2 **ATCO:** Air Traffic Control Officer.

1.2.4 Police 1

The driver of Police 1 gave a full and detailed account to the Investigation. At 09.13 hrs, Police 1 had been cleared to conduct an inspection on RWY 17 and was instructed to proceed onto RWY 17 via Taxiway A but to hold short of RWY 07-25. As the driver was listening out on 121.850 MHz he could not hear the take-off clearance issued to the B737 which was made on the Tower frequency of 119.300 MHz.

However, when the driver of Police 1 became aware of the B737 increasing power, he immediately took the initiative of vacating onto RWY 07, reporting on 121.850 MHz *'Ground, I'm vacating onto 07 there'*. This was acknowledged by the AMC who was covering the SMC position at the time. After completion of the patrol, the driver of Police 1 contacted the AMC by telephone and reported the incident to the Duty Airport Fire Officer.

1.3 Documentation

The following is extracted from the Cork Manual of Air Traffic Services II (MATS II), Vol. 3 Operations Manual:

From Section 1.4.1 Closing & Opening of Ground Movements Position:

'Combining Tower and ground movements during published hours (0730 – 1730 UTC). In the event of the SMC having to leave the Tower for whatever reason, the SMC shall consult with the AMC taking into account the actual and predicted volume of line traffic and the VFR[3] training situation before leaving the Tower. The SMC will also brief the AMC on any vehicles operating on the aerodrome and on any other item considered relevant.'

From Section 1.4.2 Temporary Absence from Position:

'*Controllers are reminded that before leaving any position for whatever reason you shall:*

- *Get the agreement of your colleague for the duration requested*
- *Fully brief your colleague of all activity you are dealing with*
- *Return to your position within the time scale agreed.'*

3 **VFR:** Visual Flight Rules.

2. ANALYSIS

Circumstances dictated that the AMC was covering both the AMC and SMC positions for approximately 15 minutes prior to the incident. When the SMC requested a fatigue break, the traffic levels were relatively light. The procedures as published in Cork MATS II state that amalgamation of the AMC and SMC positions in Cork Tower is permissible under certain circumstances. However over the period in question the traffic and level of R/T calls increased. The workload was still manageable, but contributed to a level of distraction to the ATCO on Tower (AMC) duty.

Normally the Tower (AMC) position uses frequency 119.300 MHz and Ground (SMC) uses 121.850 MHz. While covering both positions the AMC must communicate with traffic on two separate frequencies. As the B737 received take-off clearance on Tower the Police 1 vehicle was listening out on Ground (the only channel available to that vehicle) and could not have heard the take-off clearance issued on the Tower frequency.

When the Electrician 1 vehicle entered RWY 17 the AMC placed the 'Runway Occupied' strip on the strip board as per standard operating procedure. Some minutes later the Police 1 vehicle was also given clearance to enter the runway, instructed to hold short of RWY 07-25. With the imminent departure of the B737 aircraft, the Electrician 1 vehicle was recalled and the 'Runway Occupied' strip was removed in error as the runway was still occupied by the Police 1 vehicle.

The internal IAA investigation made a total of 9 Safety Recommendations following this event. All of these Safety Recommendations have been accepted and implemented. In particular, dual frequency operations for ground movement vehicles are now in force at Cork Airport. All such vehicles are now equipped to monitor AMC and SMC frequencies, and will use the AMC frequency when entering and operating on runways. In addition, the suitability of a white coloured saloon car for airfield patrols is being reviewed. Also it is now recommended that any vehicle being used for airfield patrols use headlights and hazard lights in addition to an amber rotating beacon. A principal factor in this occurrence was the removal of the 'Runway Occupied' strip when Electrician 1 vacated the runway despite the fact that Police 1 was still in position. A procedure has now been implemented that requires controllers to maintain a record of all vehicle operations on the manoeuvring area for ease of reference and to assist in handover situations.

In view of the above, the AAIU does not consider it necessary to issue any further Safety Recommendation.

3. CONCLUSIONS

(a) Findings

1. The AMC and SMC functions were combined to facilitate a fatigue break by the duty SMC.

2. At the time the SMC left the Tower the traffic levels were relatively light but increased significantly over the following minutes.

3. The AMC instructed Police 1 to enter RWY 17 but to hold short of RWY 07-25.

4. When Electrician 1 vacated RWY 17 the 'Runway Occupied' strip was removed from the active flight progress board.

5. The B737 was cleared for take-off while a vehicle, Police 1, occupied the runway just north of the intersection with RWY 07-25.

6. The driver of Police 1 took the initiative to vacate onto RWY 07 when it was apparent that the B737 was increasing power for take-off.

(b) Probable Cause

Take-off clearance was issued to a B737 on RWY 17 while an Operations vehicle was holding as cleared at the intersection of RWY 17-25.

(c) Contributory Factors

1. Situational awareness with regard to the position of Police 1 vehicle was temporarily lost by the AMC despite a visual scan being made of the runway prior to clearing the B737 for take-off.

2. The Police 1 vehicle was difficult to see from the tower at the time of the incident due a combination of vehicle colour and profile, the wet conditions on the runway, and rain on the tower windows. The framing around the glass may also have contributed to the vehicle being obscured.

3. Removal of the 'Runway Occupied' strip holder from the active flight progress board when Electrician 1 was clear may have reinforced the belief that the runway was clear.

4. The use of a different communication frequency by vehicles and aircraft while occupying the same active runway.

4. SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendations.

- END -

In accordance with Annex 13 to the International Civil Aviation Organisation Convention, Council Directive 94/56/EC, and Statutory Instrument No. 205 of 1997, AIR NAVIGATION (NOTIFICATION AND INVESTIGATION OF ACCIDENTS AND INCIDENTS) REGULATION, 1997, the sole purpose of these investigations is to prevent aviation accidents and serious incidents. It is not the purpose of any such accident 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.

NOTE: S.I. 205 of 1997 is superseded by S.I. 460 of 2009 as of the 9 December 2009. Investigations undertaken after 9 December 2009 are subject to the provisions of S.I. 460 of 2009

Produced by the Air Accident Investigation Unit

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