Australian Government
Australian Transport Safety Bureau

# Departure from an incorrect intersection involving an Embraer ERJ 190, VH-ZPC

Perth, Western Australia, 21 June 2013

**ATSB Transport Safety Report**
Aviation Occurrence Investigation
AO-2013-112
Final – 31 October 2013

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

**Publishing information**

**Published by:** Australian Transport Safety Bureau
**Postal address:** PO Box 967, Civic Square ACT 2608
**Office:** 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
**Telephone:** 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
**Facsimile:** 02 6247 3117, from overseas +61 2 6247 3117
**Email:** atsbinfo@atsb.gov.au
**Internet:** www.atsb.gov.au

© Commonwealth of Australia 2013

**Ownership of intellectual property rights in this publication**
Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia.

**Creative Commons licence**
With the exception of the Coat of Arms, ATSB logo, and photos and graphics in which a third party holds copyright, this publication is licensed under a Creative Commons Attribution 3.0 Australia licence.

Creative Commons Attribution 3.0 Australia Licence is a standard form license agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work.

The ATSB's preference is that you attribute this publication (and any material sourced from it) using the following wording: *Source:* Australian Transport Safety Bureau

Copyright in material obtained from other agencies, private individuals or organisations, belongs to those agencies, individuals or organisations. Where you want to use their material you will need to contact them directly.

**Addendum**

| Page | Change | Date |
|---|---|---|
| | | |
| | | |

# Departure from an incorrect intersection involving an Embraer ERJ 190, VH-ZPC

## What happened

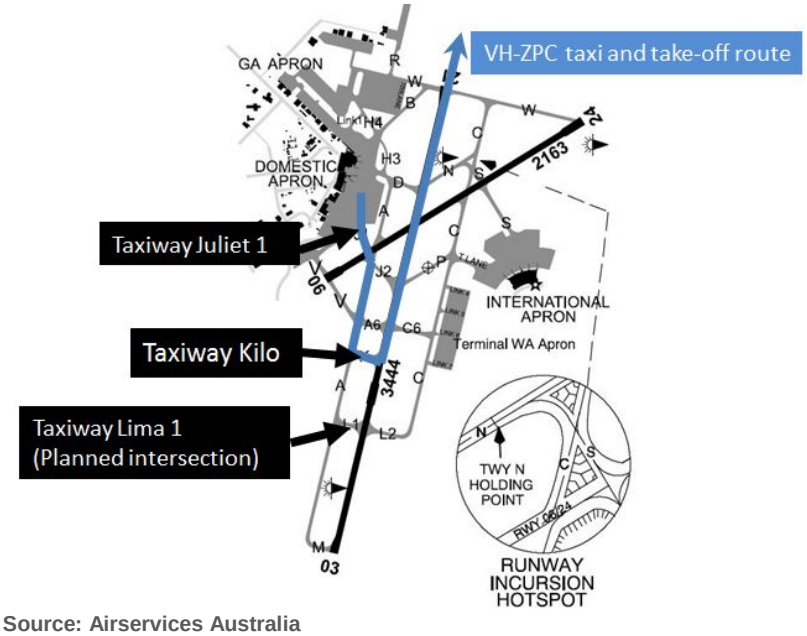
On 21 June 2013, the crew of an Embraer ERJ 190 aircraft operated by Virgin Australia, registered VH-ZPC (ZPC), conducted a scheduled passenger flight from Perth to Broome, Western Australia. The first officer (FO) was designated as the pilot flying and the captain was the pilot monitoring. During the pre-flight checks, the crew discussed which runway they would use for the take-off. As the aircraft was heavily loaded, the FO advised the captain that the aircraft was within 1 tonne of the maximum take-off weight for the runway currently in use at Perth, runway 06, and asked whether they should plan to use the longer runway, runway 03.

The FO recalled the captain responding that they should use runway 03 and use 'Kilo' intersection 'to make it worthwhile'. This placed the thought in the FO's mind that the take-off distance from intersection 'Kilo' was greater than from 'Lima' (Figure 1). As there were no take-off figures in the manual for 'Kilo', the FO entered the data for a departure from the intersection of taxiway 'Lima' on runway 03, into the flight management system (FMS). The FO was then under the impression that the take-off distance from 'Kilo' was greater than from 'Lima' and the figures entered would have included a buffer for a take-off from anything longer than intersection 'Lima'.

The take-off briefing conducted prior to pushback included that figures were used allowing a take-off from intersection 'Lima' or longer.

The FO requested a taxi clearance to the taxiway 'Kilo' intersection of runway 03, and that clearance was given by air traffic control (ATC). The crew did not recall performing the usual taxi route briefing at that time. The captain then taxied the aircraft as per the ATC clearance, across runway 06 via taxiway 'Juliet 1', then via taxiway 'Alpha' to 'Kilo' from where they were cleared to take off on runway 03 (Figure 1). The FO conducted the standard take-off review, which included checking that the departure runway was correct, but did not have a requirement to verify the intersection.

**Figure 1: Perth Airport**




Source: Airservices Australia

During the take-off run, the aircraft was approaching V1[1] when the captain thought that something did not appear correct. He considered applying maximum thrust, but decided that the aircraft was accelerating normally and left the thrust setting as it was. Once airborne and the aircraft was set up for the cruise, the captain and the FO discussed the situation. The captain initially thought that incorrect data had been entered into the FMS, but on looking at the take-off and landing data (TOLD)[2] card, he immediately saw that the planned departure was from the intersection of taxiway 'Lima' but they had inadvertently departed from the 'Kilo' intersection.

There was no performance data in the operations manual for a 'Kilo' departure. The captain stated that, if they had been required to reject the take-off, they may not have been able to stop on the remaining runway. Subsequent calculations by the operator found that the aircraft was below the maximum take-off weight for a departure from 'Kilo' and that the take-off distance required was sufficient.

The FO had previously operated other aircraft from Perth, frequently departing from the 'Kilo' intersection.

### *Flight crew comments*

The captain believed that having mentioned intersection 'Kilo', it was then in the minds of both flight crew members.

The captain reported that there were lots of things that could have alerted them to the error. They had not completed the standard taxi route review on that flight and he thought that if they had, they may have picked up the error at that stage.

There is a taxiway opposite the runway intersection at 'Lima' but not at 'Kilo' and sighting this may have alerted them to being at an incorrect intersection. The captain reported that he now includes the intersection departure in the standard take-off review.

## Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

### *Virgin Australia*

As a result of this occurrence, the aircraft operator has advised the ATSB that they are taking the following safety actions:

- The data for the 'Kilo' intersection departure at Perth will be included in the operator's manual for the Embraer ERJ 190.
- An article highlighting the possibility of incorrect intersections will be presented in the next safety publication to be distributed to all crew.
- The need to check the departure intersection will be highlighted during a briefing to check and training captains.

---

1 $V_1$ is the critical engine failure speed or decision speed. Engine failure below this speed shall result in a rejected take-off; above this speed the take-off run should be continued.

2 Take-off and landing data, kept handy in the cockpit.

## Safety message

The ATSB SafetyWatch campaign has identified the under-reporting of occurrences as one focus area of its investigations. Mistakes such as the one described in this incident, where no consequences occur, often go unreported. The ATSB commends the flight crew and operator for reporting this occurrence, which allowed the lessons of the occurrence to be shared with others.

## General details

### *Occurrence details*

| | | |
|---|---|---|
| Date and time: | 21 June 2013 – 1650 WST | |
| Occurrence category: | Incident | |
| Primary occurrence type: | Pre-flight/planning event | |
| Location: | Perth Airport, Western Australia | |
| | Latitude: 31° 56.42' S | Longitude: 115° 58.02' E |

### *Aircraft details*

| | | |
|---|---|---|
| Manufacturer and model: | Embraer-Empresa Brasileira de Aeronautica ERJ 190-100 IGW | |
| Registration: | VH-ZPC | |
| Operator: | Virgin Australia | |
| Serial number: | 19000170 | |
| Type of operation: | Air transport – high capacity | |
| Persons on board: | Crew – 5 | Passengers – 65 |
| Injuries: | Crew – Nil | Passengers – Nil |
| Damage: | Nil | |

## About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The Bureau is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

## About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.