



**Australian Government**

**Australian Transport Safety Bureau**

# Pre-flight preparation event involving Airbus A320, VH-VNC

Cairns Airport, Queensland, 21 January 2017

**ATSB Transport Safety Report**  
Aviation Occurrence Investigation  
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#### **Addendum**

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# Pre-flight preparation event involving Airbus A320, VH-VNC

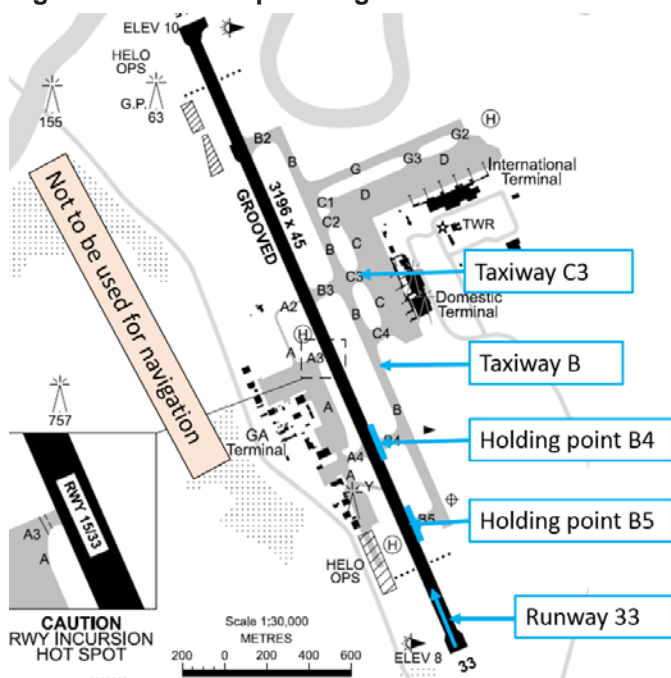
## What happened

On 21 January 2017, the crew of an Airbus A320 aircraft, registered VH-VNC (VNC), prepared to conduct Tigerair flight 491 (TT491) from Cairns to Brisbane, Queensland. The flight crew consisted of a training captain and a first officer under supervision. The first officer was in the role of pilot flying for the sector and the captain was pilot monitoring.<sup>1</sup>

The flight crew conducted a take-off and departure briefing based on the environmental conditions and runway in use, expecting to commence the take-off roll from the B5 taxiway intersection (Figure 1). They entered the take-off data into the iPad application and loaded the data into the flight management guidance computer.

At about 1511 Eastern Standard Time (EST), the surface movement controller (SMC) cleared the flight crew of a de Havilland DHC-8 (DHC-8) aircraft that had been parked on an adjacent bay to VNC, to taxi using taxiway C3 (and B) to holding point B4. About 30 seconds later, the SMC cleared the flight crew of VNC to taxi using taxiway C3 (onto taxiway B) to holding point B5, which was the clearance they had expected. The crew had briefed each other on that taxi route.

Figure 1: Cairns Airport diagram extract



Source: Airservices Australia – annotated by ATSB

VNC then taxied behind the DHC-8 along taxiway B. As the DHC-8 turned onto the runway at B4, the first officer of VNC inadvertently also taxied to holding point B4. After completing the 'above the line' pre-take-off checks (see *Pre-take-off checks*), at about 1515, the captain of VNC advised the aerodrome controller (ADC) that they were ready for take-off. The ADC cleared VNC to line up on the runway and, as the first officer taxied the aircraft onto the runway, the flight crew completed the 'below the line' pre-take-off checks.

<sup>1</sup> Pilot Flying and Pilot Monitoring: procedurally assigned roles with specifically assigned duties at specific stages of a flight. The PF does most of the flying, except in defined circumstances; such as planning for descent, approach and landing. The PM carries out support duties and monitors the PF's actions and the aircraft's flight path.

About 1 minute later, the ADC cleared VNC for take-off. Immediately after the captain read back the take-off clearance, the ADC advised the crew that they were lined up at the B4 (not B5) intersection. The crew did not respond, so the ADC cancelled the take-off clearance and instructed them to hold position. The captain then confirmed that they needed to commence the take-off from B5. The ADC cleared them to turn around on the runway, exit using B4 and taxi to B5. The aircraft subsequently took off from the B5 intersection and the flight continued without incident.

There was a 403 m difference in available runway length, between the B4 and B5 taxiway intersections.

### ***Pre-take-off checks***

The pre-take-off checklist consisted of two parts: 'above the line' and 'below the line'. The crew complete the first part (above the line) before reporting ready for take-off, and the second part (below the line) after the aircraft enters the runway.

### ***Tower comment***

The captain contacted the Tower controller after the flight to thank the controller for intervening, and was advised that there had been a similar incident the previous day. The ATSB could find no record of any similar occurrences at Cairns Airport.

## **Safety analysis**

### ***Following the DHC-8***

As the DHC-8 taxied immediately ahead of VNC, the flight crew may have been distracted by following the DHC-8 to B4. Although VNC had pushed back first, the DHC-8 flight crew had received their taxi clearance and commenced taxiing before VNC. There was no specific instruction to the flight crew of VNC to follow the DHC-8.

### ***Cabin readiness***

As the first officer turned the aircraft onto taxiway B4, the captain's attention was on communicating with the cabin crew and observing their positions on the cabin video.

One of the items on the pre-take-off checklist (above the line) is 'cabin ready'. The captain, as pilot monitoring, temporarily handed over responsibility for ATC communications to the first officer (as pilot flying), while they confirmed the status of the cabin. Because the captain had not heard the initial indication that the cabin was ready, they looked at the cabin video to check the cabin crew were seated and called the cabin crew on the interphone, who confirmed that the cabin was secure for take-off.

The captain then took back responsibility for ATC communications, and returned their focus to cockpit activities. As the captain was busy liaising with the cabin crew as the aircraft turned onto B4, the likelihood that they would notice that the aircraft was approaching the runway on the incorrect taxiway was reduced.

### ***Training flight***

The first officer had completed 11 sectors and was under the supervision of the training captain. The first officer assessed their workload at the time as moderate. This was the first officer's second flight into Cairns since joining the operator. The captain also commented that runway 33 was not the usual runway in use at Cairns (due to the prevailing winds). A lack of familiarity with the runway may have reduced the flight crew's ability to detect the incorrect runway position when the aircraft was lined up on the runway.

The captain commented that the first officer was taxiing slightly faster than optimal coming up to the holding point. The captain may have been focused on monitoring the progress of the aircraft to

ensure the aircraft stopped before the holding line, which may have distracted them from noticing the B4 taxiway sign (to the left of the taxiway).

Normally, the pilot flying would have completed the flight controls check earlier in the taxi and well before the holding point, but the first officer completed checking the controls as the aircraft approached the turn onto B4. The captain commented that the checks were all completed correctly and in the correct order, but slightly later than normal due to the relative inexperience of the pilot flying.

### ***Pre-take-off checklist***

The relevant 'below the line' check to confirm that the aircraft was prepared to take-off on the correct runway, was for the pilot flying to state 'runway 33 confirm', then the pilot monitoring to respond 'runway 33 confirm'. While this checklist item provided confirmation of the runway, reference to an intersection was not part of the verbal check/response.

The first officer commented that confirming the intersection as well as the runway during the pre-take-off checks may prevent a similar incident occurring.

### ***Potential overrun***

The aircraft operator reviewed the ramifications of a departure from the B4 intersection with B5 performance take-off data. Initial calculations showed that in the event of a rejected take-off, either with all engines operating or one engine inoperative, would have resulted in a runway overrun.

## **Findings**

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

- The first officer taxied the aircraft to the runway holding point B4 instead of B5 and may have been distracted by following the DHC-8, which taxied immediately ahead of them and took off from the runway intersection with taxiway B4.
- The captain was communicating with cabin crew and looking at the cabin video as the aircraft turned onto taxiway B4, which probably distracted them from verifying that they had turned into the correct taxiway.
- Neither member of the flight crew recalled seeing the B4 holding point sign (to the left of the aircraft) at any time.
- The first officer was under training and had only been to Cairns once previously, and runway 33 was not the usual runway in use. Lack of familiarity with runway 33 may have reduced the flight crew's ability to detect the incorrect runway position when the aircraft was lined up on the runway.
- The air traffic controller saw the aircraft at the incorrect intersection after clearing it for take-off and alerted the crew.
- There was potential for a runway overrun in a rejected take-off situation if the aircraft had commenced the take-off run from the B4 intersection.

## **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 safety action in response to this occurrence.

### ***Aircraft operator***

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

**Safety awareness**

Tigerair has distributed a Flight Training Notice to alert training and checking crew on both the A320 and B737 fleets to the event. Tigerair Safety will be publishing the event in their next Safety Spotlight newsletter.

**Safety message**

This incident highlights the importance of confirming that an aircraft is lined up for take-off at the correct intersection, or position on the runway, as well as the correct runway. Confirmation of runway heading is done by checking the aircraft’s magnetic heading with the runway direction once the aircraft is lined up on the runway. The intersection should be checked before the aircraft enters the runway.

Although this incident involved the use of an incorrect intersection rather than a wrong runway, a study conducted by the US Federal Aviation Administration in 2007, [Wrong Runway Departures](#), outlines some relevant and important points. A class 2 electronic flight bag, which shows the aircraft’s location on a moving map display, is a technological enhancement described in the study as a safety enhancement to mitigate the risk of aircraft taking off from a wrong runway. The study identified a number of factors that contributed to aircraft taking off from an incorrect runway including:

- a similar layout, with one taxiway leading to an area with multiple runway thresholds located in close proximity to one another
- a short distance between the airport terminal and the runway
- a complex airport design
- the use of a runway as a taxiway
- a single runway that uses intersection departures.

**General details**

**Occurrence details**

Date and time:	21 January 2017 – 1516 EST	
Occurrence category:	Incident	
Primary occurrence type:	Flight preparation/navigation	
Location:	Cairns Airport, Queensland	
	Latitude: 16° 53.15' S	Longitude: 145° 45.32' E

**Aircraft details**

Manufacturer and model:	Airbus A320	
Registration:	VH-VNC	
Operator:	Tiger Airways	
Serial number:	3275	
Type of operation:	Air transport high capacity – passenger	
Persons on board:	Crew – Unknown	Passengers – Unknown
Injuries:	Crew – 0	Passengers – 0
Aircraft damage:	Nil	

**About the ATSB**

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB 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 operations involving the travelling public.

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.