



Australian Government

Australian Transport Safety Bureau

Loss of separation involving a Cessna 310, VH-XXT and a Cessna 210, VH-RQD

Darwin Airport, 17 February 2012

ATSB Transport Safety Report

Aviation Investigation

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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

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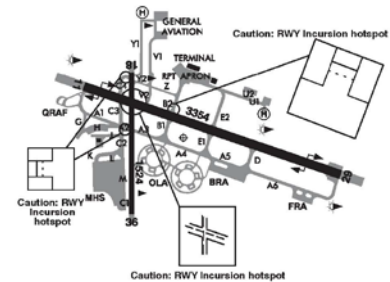
Loss of separation involving a Cessna 310, VH XXT and a Cessna 210, VH RQD

What happened

On 17 February 2012, at about 1315 Central Standard Time¹, a Cessna 210, registered VH-RQD (RQD), was backtracking runway 18 for the general aviation parking area at Darwin airport, Northern Territory.

RQD vacated runway 18 to the left via taxiway Alpha and held short of runway 29 at holding point Charlie 3 (C3) (Figure 1), in accordance with instructions issued by the surface movement controller (SMC). At the same time, a Cessna 310, registered VH-XXT (XXT), was holding at taxiway Echo 2 (E2) for an intersection departure from runway 29.

Darwin runway complex

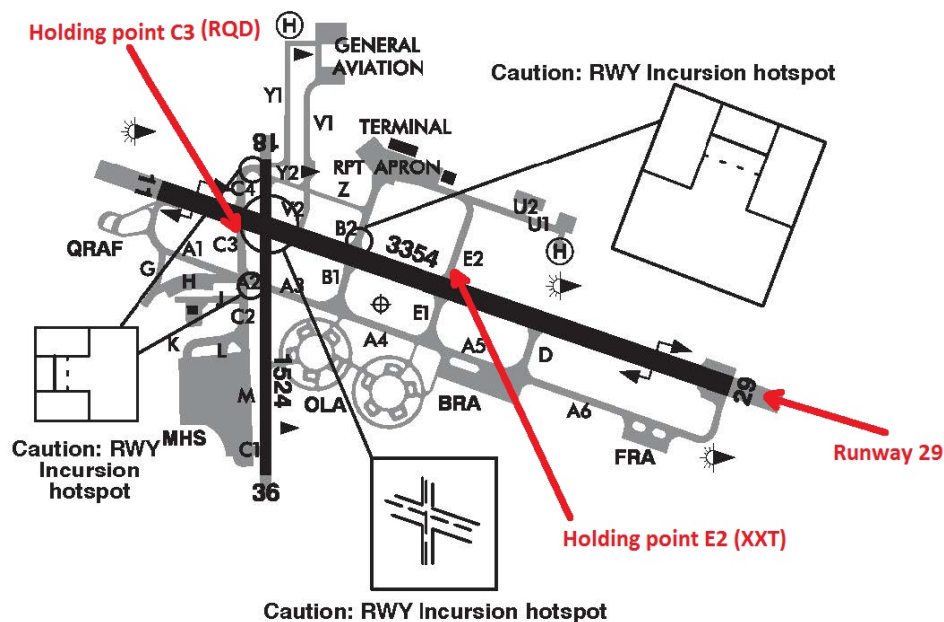


Source: Airservices Australia

- At 1319:00, the aerodrome controller (ADC) instructed XXT to line up on runway 29.
- At 1319:20, the SMC instructed RQD to cross runway 29 on taxiway Charlie and advised that “the aircraft lining up will be holding for you.”
- At 1319:40, the ADC cleared XXT for takeoff on runway 29.

It was estimated both visually and by radar that XXT then overflew RQD crossing the runway by between 150 ft and 500 ft (Figure 2).

Figure 1: Darwin Airport



Source: Airservices Australia

¹ Central Standard Time (CST) was coordinated Universal Time (UTC) + 9.5 hours.

Airport information

The Department of Defence provides air traffic control services at the Darwin airport.²

The runways in use at the time of the incident were runway 29 and runway 18. Taxiways Charlie 1 (C1) and Charlie 2 (C2) were unavailable due to explosive ordinance loading on the military hardstand. This restriction required all landing aircraft on runway 18 to backtrack and vacate no earlier than taxiway Alpha. The extended unavailability of taxiways C1 and C2 was unusual and resulted in restrictions and coordination outside the experience of the controllers.

ADC flight progress strips

The ADC used flight progress strips³ to document aircraft details and control instructions. Each flight progress strip represented one aircraft or a formation of aircraft. The ADC strip bay was designed to reflect the current and projected clearances applicable to the take-off and landing areas and to serve as a memory aid to the ADC. A red “runway occupied” strip was used to represent an obstruction or limitation to the issuing of a take-off or landing clearance. The positioning of aircraft flight progress strips and the red “runway occupied” strip within the strip bay was dictated by ATC procedure and represented the ‘strip picture’, to aid in maintaining a traffic picture regarding the disposition of traffic on the runway and in the vicinity of the airport.

Visual Check of the take-off path

Manual of Air Traffic Services (MATS) procedures required the ADC to perform a visual check of the take-off path prior to issuing a take-off clearance and again immediately before a takeoff commenced.

Figure 2: Approximate path VH-XXT and VH-RQD



Source: Google Earth

² The Department of Defence – Royal Australian Air Force (RAAF) was the airspace administering authority responsible for the provision of air traffic control services at Darwin.

³ Flight progress strips are paper strips in plastic holders typically 25 mm x 200 mm, coloured to reflect the type of traffic movement, displaying aircraft details including callsign, type and altitude.

Coordination

The SMC is responsible for the control and coordination of aircraft operating on the ground. Movement of aircraft on the runways is subject to coordination with, and approval of, the ADC. Consequently, when an aircraft is required to cross a runway in use, the SMC is required to seek prior approval from the ADC.

Aerodrome controller

The ADC recalled coordinating the runway crossing of RQD with the SMC and placing the red “runway occupied” strip into the strip bay.

Surface movement controller

The SMC recalled coordinating the crossing of RQD with the ADC and the ADC placing the “runway occupied” strip into the strip bay. However, the SMC did not recall hearing the ADC issue a take-off clearance to XXT.

Tower supervisor

The tower supervisor noted that, at the time of the incident, there was a large number of aircraft waiting to depart and he had moved from his normal position to be closer to the ADC to assist. However, at the time of the incident, the supervisor was speaking with another controller within the tower. The supervisor did recall hearing the runway crossing coordination between the SMC and the ADC, and did not hear the take-off clearance issued to XXT.

Controller information

The ADC obtained a Darwin ADC endorsement in August 2010. The controller commented during the Defence investigation that he felt “uncomfortable” on the day due to the unusual configuration of the aerodrome, with C1 and C2 not being available. Also, the ADC controller had recently asked the tower supervisor to assist him develop his ATC skills to a training officer standard. Consequently, the ADC was focused on expediting the departure of aircraft.

Defence Investigation

The Defence investigation concluded that the red “runway occupied” strip, representing the obstruction of the crossing RQD, was placed into the strip bay above the departing flight progress strip representing XXT instead of below the flight progress strip for XXT as required by the procedures. This led the ADC controller to have an incorrect ‘strip picture’ and to conclude that there was no obstruction on the runway at the time of issuing the take-off clearance to XXT.

The Defence investigation also concluded that it was unlikely that a visual check of the take-off path would have alerted the ADC to the crossing aircraft, as it was most likely that RQD commenced crossing a number of seconds after XXT had commenced the take-off roll.

Safety message

Runway incursions are recognised as an ongoing safety concern for the aviation industry and have been cited in numerous accidents world-wide. They can be the result of many different factors and involve pilots, controllers and vehicle drivers.

A joint paper published by EUROCONTROL and the United States Federal Aviation Administration in September 2010 recognised that the air traffic management system was critically dependent on the day-to-day performance of air traffic controllers, and that monitoring traffic was a critical and complex activity. This incident highlights the need for controllers to remain vigilant in monitoring and scanning the runway, both prior to, and after issuing take-off and runway crossing clearances to pilots. The EUROCONTROL and FAA paper is available at the following link:

EUROCONTROL – Human Performance and Safety

- <http://www.eurocontrol.int/articles/safety-and-human-performance-library>

General details

Occurrence details

Primary occurrence type:	Loss of separation	
Occurrence category:	Serious incident	
Location:	Darwin Airport	
	Latitude: S 12°24.35′	Longitude: E 130°52.40′

Cessna 310, VH-XXT

Manufacturer and model:	Cessna 310
Registration:	VH-XXT
Type of operation:	Charter
Damage:	None

Cessna 210, VH-RQD

Manufacturer and model:	Cessna 210
Registration:	VH-RQD
Type of operation:	Charter
Damage:	None

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.