Australian Government
Australian Transport Safety Bureau

# Aircraft proximity event between a Piper PA-44, VH-CZH and a Mooney M20, VH-DJU

Near Rottnest Island aerodrome, Western Australia, 5 October 2013

**ATSB Transport Safety Report**
Aviation Short Investigation
AO-2013-176
Final – 25 February 2014

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

**Publishing information**

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**Addendum**

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# Aircraft proximity event between a Piper PA-44, VH-CZH and a Mooney M20, VH-DJU

## What happened

On 5 October 2013, a Piper PA-44 aircraft, registered VH-CZH (CZH), was enroute to Rottnest Island, from Perth, Western Australia, to conduct instrument flight rules (IFR)[1] navigation aid (navaid) training. On board were a flight instructor and student pilot.

As CZH departed Perth controlled airspace during the short transit to Rottnest Island, the pilot contacted and monitored the Perth Centre air traffic control (ATC) frequency, as well as broadcasting on, and monitoring, the Rottnest Island common traffic advisory frequency (CTAF).

When CZH arrived over the Rottnest Island non-directional (radio) beacon (NDB)[2] at 3,000 ft above mean sea level (AMSL), there was one other IFR training aircraft conducting navaid training, and a visual flight rules (VFR) aircraft departing the aerodrome. The student of CZH, monitored by the instructor, practiced some holding patterns prior to commencing the runway 27 NDB approach (Figure 1). Both the instructor and student constantly updated their position reports on the CTAF. CZH was in instrument meteorological conditions (IMC),[3] with the weather rapidly deteriorating as a large cold front moved in from the south-west. With the significant increase in turbulence, the instructor began to manage the operation of the radio, to allow the student to focus on flying the aircraft.

At about 1509 Western Standard Time (WST),[4] as CZH was inbound in the holding pattern at 2,000 ft, Perth Centre ATC advised the crew that an IFR Mooney M20 aircraft, registered VH-DJU (DJU), was inbound to Rottnest Island, and would be on descent from 3,000 ft, for instrument navaid training. The estimated time of arrival overhead the NDB would be 1518. The instructor in CZH acknowledged this traffic information.

Shortly after, as DJU left Perth controlled airspace, the instructor and student in DJU gave their initial report to Perth Centre ATC advising they were at 3,000 ft and in cloud. Perth Centre ATC passed traffic information and a position report on CZH to the pilots of DJU, advising that CZH was conducting navaid training. The pilot in DJU acknowledged this transmission.

The air traffic controller then queried the pilot of DJU if he would be monitoring both the Perth Centre frequency and the Rottnest Island CTAF. Before the pilot could reply, the aircraft encountered moderate to severe turbulence and the pilot requested a descent to 2,000 ft. The controller approved the descent, advising the pilot that this would take DJU from controlled airspace into uncontrolled, Class G, airspace.[5] The pilot acknowledged this information.

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1 Instrument flight rules permit an aircraft to operate in instrument meteorological conditions (IMC), which have much lower weather minimums than visual flight rules. Procedures and training are significantly more complex as a pilot must demonstrate competency in IMC conditions, while controlling the aircraft solely by reference to instruments. IFR-capable aircraft have greater equipment and maintenance requirements.

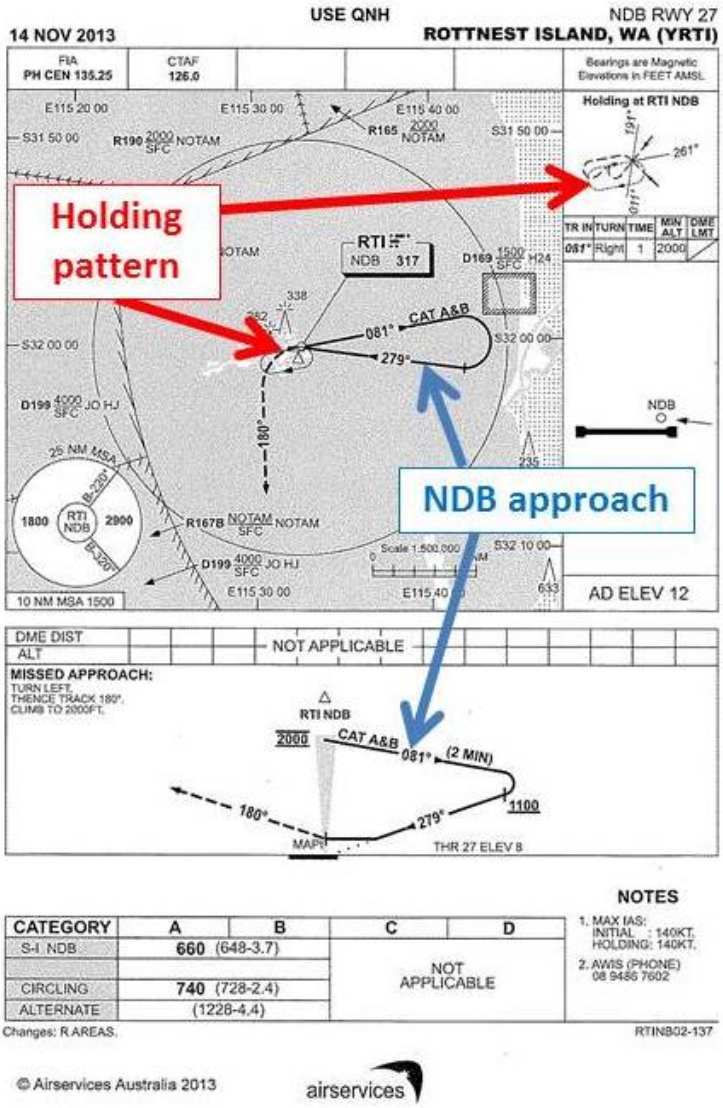
2 A radio transmitter at a known location, used as a navigational aid. This signal transmitted does not include inherent directional information.

3 Describes weather conditions that require pilots to fly primarily by reference to instruments, and therefore under IFR, rather than by outside visual reference. Typically, these means flying in cloud or limited visibility.

4 Western Standard Time (WST) was Coordinated Universal Time (UTC) + 8 hours.

5 Class G: IFR and VFR flights are permitted and do not require an airways clearance. IFR flights must communicate with air traffic control and receive traffic information on other IFR flights and a flight information service. VFR flights receive a flight information service if requested.

**Figure 1: Rottnest Island runway 27 NDB approach chart**




**Source: Airservices Australia**

At about 1515, the instructor of CZH, having expected DJU to have made a CTAF call by now, tried to contact DJU on the CTAF. After three attempts with no response, he asked Perth Centre ATC for DJU's current position.

At about 1516, Perth Centre ATC alerted CZH that DJU was in their 10 o'clock[6] position on converging tracks and descending through 1,900 ft (Figure 2). As CZH was about to turn inbound to the NDB, and would soon be conducting the published missed approach climbing southward to 2,000 ft (Figure 3), the instructor in CZH broadcast on the Perth Centre frequency and suggested to the crew of DJU that they climb to 3,000 ft. The crew in DJU responded, advising they were currently at 2,000 ft. The pilot of CZH advised that they were at 1,200 ft. DJU then commenced a climb to 3,000 ft.

After completing the approach, CZH departed Rottnest Island for Jandakot, and DJU continued with instrument navaid training.

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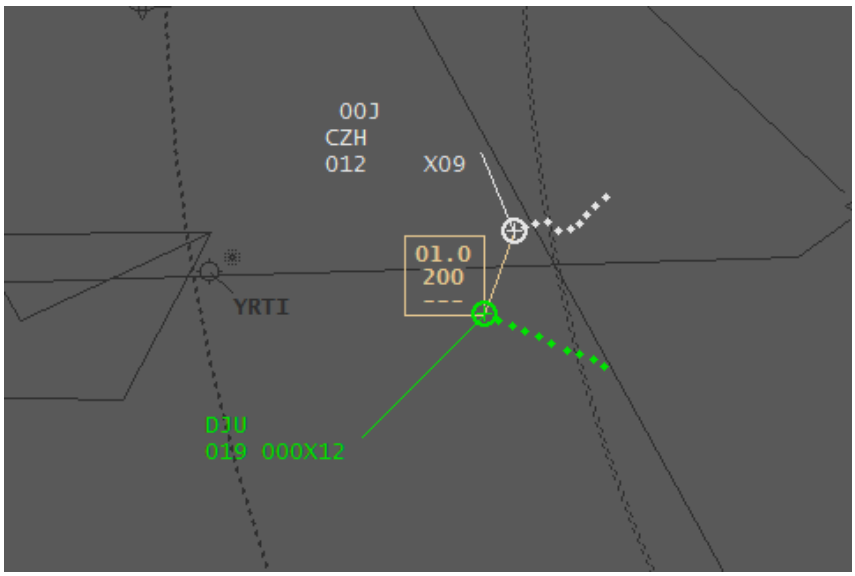
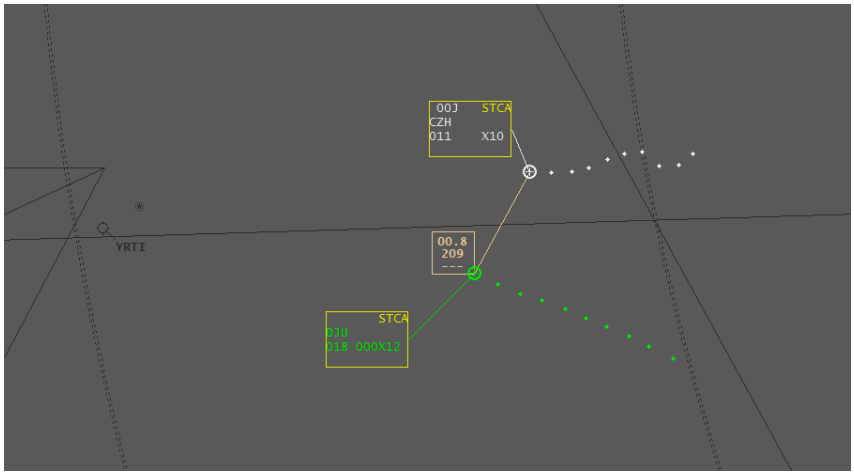
[6] The clock code is used to denote the direction of an aircraft or surface feature relative to the current heading of the observer's aircraft, expressed in terms of position on an analogue clock face. Twelve o'clock is ahead while an aircraft observed abeam to the left would be said to be at 9 o'clock.

**Figure 2: Radar data at 1516:16 showing both aircraft on converging tracks and 700 ft vertically and 1.0 NM laterally apart**




Source: Airservices Australia

**Figure 3: Radar data at 1516:31 showing both aircraft on converging tracks and 700 ft vertically and 0.8 NM laterally apart**




Source: Airservices Australia
Note: STCA is a short term conflict alert

## *Pilot comments (VH-CZH)*

The instructor of CZH provided the following comments regarding the incident:

- He became concerned when his attempts to contact DJU on the CTAF were not successful. He had calculated that the pilots in DJU should have called inbound giving the aircraft's position and intentions, given the estimated time of arrival that had been passed by Perth Centre ATC.
- As CZH continued outbound on the runway 27 NDB approach, he recalled requesting DJU's position from Perth Centre ATC. Centre then advised him of DJU's converging track and descent.
- If the pilots of CZH were not visual approaching the minima, the instructor was concerned about potential conflict with DJU during the published missed approach. He then suggested over the Perth Centre frequency to the crew in DJU that they climb. To reduce the proximity between the two aircraft, CZH continued to descend to the minima.

- He reported that Perth Centre ATC were very pro-active in issuing traffic advice. The first CTAF call he heard from DJU was when the aircraft passed over the NDB.
- He commented how important it is for all pilots to broadcast on and monitor the CTAF.

### *Pilot comments (VH-DJU)*

The instructor of DJU provided the following comments regarding the incident:

- He reported that they had entered IMC when crossing the coast westbound and when still in controlled airspace on the Perth Departures frequency. He noted that when the aircraft entered the eastward moving cold front that the rapid increase in turbulence meant he focussed his attention on monitoring the student as he worked to keep DJU within safe parameters.
- His attention remained on the student's efforts to keep DJU under control, when he recalled getting a request from Perth Centre ATC, but was unable to communicate other than 'STANDBY' as they continued to deal with the conditions.
- He recalled being advised to climb back to 3,000 ft, which they commenced when suggested to them.

## Safety message

Operations at non-controlled aerodromes such as Rottnest Island continue to feature in ATSB reports.

This occurrence had extra layers of complexity for the following reasons:

- both aircraft operating in IMC
- extremely rough and turbulent conditions
- the timing of DJU entering the worst of the weather, when they were still on frequency with Perth Departures and also Perth Centre ATC once descending
- the high workload for instructors and students in the airspace between Jandakot, Perth and the transition to class G airspace close to Rottnest Island .

The ATSB SafetyWatch campaign highlights the broad safety concerns that come out of our investigation findings and from the occurrence data reported to us by industry. One of the safety concerns is safety around non-controlled aerodromes. The following link highlights that insufficient communication between pilots, and breakdowns in situational awareness were the most common contributors to occurrences in the vicinity of non-controlled aerodromes. Between 2003 and 2008, 709 occurrences in the vicinity of non-controlled aerodromes were reported to the ATSB. Of these, 388 related to a break-down of communication, both air-to-air, and air-to ground. The ATSB has produced a sticker (Figure 4) available to be displayed throughout relevant sectors of the industry.

**Figure 4: ATSB SafetyWatch sticker in relation to Non-Towered (non-controlled) aerodromes**


Source: ATSB

This report is available at: www.atsb.gov.au/safetywatch/safety-around-aeros.aspx.

The following publications from the Civil Aviation Safety Authority (CASA) also provide further information on operations at non-controlled aerodromes:

- The Civil Aviation Regulations 1988 (CAR) 166C (2) detail the requirements to broadcast in the vicinity of a non-controlled aerodrome.
- Civil Aviation Advisory Publication (CAAP) 166-1 (0) – *Operations in the vicinity of non-towered (non-controlled) aerodromes* offers guidance material on CAR 166. It is available at www.casa.gov.au/wcmswr/_assets/main/download/caaps/ops/166-1.pdf

# General details

## *Occurrence details*

| | | |
|---|---|---|
| Date and time: | 5 October 2013 – 1517 WST | |
| Occurrence category: | Serious incident | |
| Primary occurrence type: | Aircraft proximity event | |
| Location: | 7 km east of Rottnest Island, Western Australia | |
| | Latitude: 32° 00.27' S | Longitude: 115° 37.08'E |

## *Aircraft details: VH-CZH*

| | | |
|---|---|---|
| Manufacturer and model: | Piper Aircraft Corporation PA-44-180 | |
| Registration: | VH-CZH | |
| Serial number: | 4496216 | |
| Type of operation: | Flying training | |
| Persons on board: | Crew – 2 | Passengers – Nil |
| Injuries: | Crew – Nil | Passengers – Nil |
| Damage: | Nil | |

## *Aircraft details: VH-DJU*

| | | |
|---|---|---|
| Manufacturer and model: | Mooney Aircraft Corporation M20J | |
| Registration: | VH-DJU | |
| Serial number: | 24-1075 | |
| Type of operation: | Flying training | |
| Persons on board: | Crew – 2 | Passengers – Nil |
| Injuries: | Crew – Nil | Passengers – Nil |
| 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 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.