

Australian Government Australian Transport Safety Bureau

# Aircraft proximity event between a Cessna 172, VH-RQZ and an Agusta AW139, VH-ESZ

Archerfield Airport, Queensland, 26 August 2013

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#### Addendum

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## Aircraft proximity event between a Cessna 172, VH-RQZ and an Agusta AW139, VH-ESZ

## What happened

On 26 August 2013, a flight instructor and student pilot were conducting night circuits in a Cessna 172 aircraft, registered VH-RQZ (RQZ), at Archerfield Airport, Queensland.<sup>1</sup> At the time, there were two other aircraft conducting night circuits and an aircraft operating under the instrument flight rules (IFR) inbound to Archerfield from the west. Common traffic advisory frequency (CTAF) procedures were in place at the time.

**VH-ESZ** 



Source: Operator

At about 1845 Eastern Standard Time,<sup>2</sup> an IFR-operated

Agusta AW139 helicopter, registered VH-ESZ (ESZ), departed the Royal Brisbane Hospital on a 4 minute flight to Archerfield. On board the helicopter were three crew members: the pilot in command in the front right seat, the aircrew officer in the front left seat, and the rescue officer in the back.

When 5.5 NM north of Archerfield, the pilot of ESZ was instructed by Brisbane air traffic control (ATC) to change to the CTAF and was advised of an IFR aircraft inbound to Archerfield and that there were multiple aircraft in the circuit.

At about 1851, the student pilot of RQZ broadcast on the CTAF that he was on the downwind leg of the circuit for runway 10. The pilot of the IFR aircraft replied that they would follow RQZ in the circuit. The pilot of ESZ then broadcast an inbound call advising that they were 5 NM to the north of Archerfield at 1,400 ft above mean sea level (AMSL). The pilot of the IFR aircraft responded, stating that they were joining crosswind for runway 10.

The pilot of ESZ then communicated with the pilot of the IFR aircraft and advised that they were descending through 900 ft and would be conducting a tight left base for runway 10. The pilot of ESZ reported that he received a traffic collision avoidance system  $(TCAS)^3$  traffic advisory  $(TA)^4$  on the IFR aircraft. He also reported sighting two other aircraft in the circuit and noted that they were unlikely to come into conflict with ESZ.

The student pilot of RQZ then broadcast that they were turning base for a touch-and-go on runway 10 and were conducting a simulated landing light failure.

About 15 seconds later, the pilot of the IFR aircraft asked the pilot of RQZ to confirm his position, to which the instructor replied that they were turning onto final. Shortly after, the pilot of ESZ broadcast that he was on a tight left base for runway 10.

<sup>&</sup>lt;sup>1</sup> Archerfield Tower provides air traffic services within Class D airspace during tower hours. Outside tower hours the airspace becomes Class G and common traffic advisory frequency (CTAF) procedures apply.

<sup>&</sup>lt;sup>2</sup> Eastern Standard Time (EST) was Coordinated Universal Time (UTC) + 10 hours.

<sup>&</sup>lt;sup>3</sup> Traffic collision avoidance system (TCAS) is an aircraft collision avoidance system. It monitors the airspace around an aircraft for other aircraft equipped with a corresponding active transponder and gives warning of possible collision risks.

<sup>&</sup>lt;sup>4</sup> Traffic collision avoidance system traffic advisory, when a TA is issued, pilots are instructed to initiate a visual search for the traffic causing the TA.

When RQZ was on final approach to runway 10, the instructor sighted ESZ on a close base in his 10 o'clock<sup>5</sup> position, about 1 NM (1850 m) away. The instructor of RQZ then broadcast asking the pilot of ESZ whether he had RQZ ('the aircraft on final') sighted, but did not hear any response. The instructor of RQZ reported that they were then about 300-500 m away from ESZ and about 50 ft below. The instructor took control of the aircraft and initiated a go-around. He manoeuvred the aircraft about 50 m to the right of the runway centreline to ensure separation with ESZ.

When at about 300 ft above ground level (AGL), the pilot of ESZ scanned for aircraft prior to turning onto final. He then sighted RQZ in his 4 o'clock position, about 100 ft below and 100 m behind ESZ and reported that RQZ appeared to have commenced a turn. The instructor of RQZ then broadcast that they were going around. The pilot of ESZ tightened the turn onto final and elected to land on the taxiway parallel to runway 10 (Figure 1). He had not received a TCAS alert on any aircraft other than the IFR aircraft, which was on downwind. The pilot of RQZ reported that they had their transponder turned on and it was operational at the time.



Figure 1: Approximate aircraft tracks

Source: Google earth and pilot recollections

The operator of ESZ had a company policy regarding alerted see-and-avoid, specifically, that the aircrew officer was responsible for assisting the pilot with listening, recording and monitoring the traffic situation. The pilot reported that none of the crew members heard any calls from RQZ or sighted the aircraft prior to the turn onto final.

<sup>&</sup>lt;sup>5</sup> 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.

### Pilot comments (VH-ESZ)

The pilot of ESZ provided the following comments regarding the incident:

- he did not hear any broadcasts from the pilot of RQZ<sup>6</sup>
- the helicopter had a search light, landing light, position lights and a strobe on at the time
- the aircrew officer reported observing RQZ conduct a subsequent landing without the landing light on.

#### Pilot comments (VH-RQZ)

The instructor reported that, at the time, RQZ had strobe, beacon and navigation lights on, but they were conducting a simulated landing light failure, which he had advised as part of his turning base broadcast on the CTAF. In addition, he heard the inbound broadcast from ESZ and subsequent communications with the pilot of the IFR aircraft.

## 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.

### **Operator of VH-ESZ**

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

- recommendations have been put forward to Airservices Australia to update the En Route Supplement Australia (ERSA) to include information regarding emergency service operations at Archerfield Airport
- a briefing discussing airspace operations at Archerfield Airport was provided to aircrews.

In addition, the operator has recommended that information depicting the departure and arrival patterns of their helicopters from the local hospitals be included in the Archerfield Airport Newsletter.

#### Airservices Australia

As a result of this occurrence, Airservices Australia has advised the ATSB that they are willing to assist with the addition of information in the ERSA regarding emergency service operations at Archerfield Airport.

#### Safety message

The ATSB SafetyWatch 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-towered aerodromes <u>www.atsb.gov.au/safetywatch/safety-around-aeros.aspx</u>.



Research conducted by the ATSB found that, between 2003 and 2008, 181 occurrences of reduced separation were reported, of which 55 were near mid-air collisions (aircraft proximity events). Insufficient communication between pilots and breakdowns in situational awareness were the most common contributors to safety incidents in the vicinity of non-towered aerodromes.

A review by the ATSB of mid-air collisions between 1961 and 2003 also found that almost 80 per cent of mid-air collisions (29 accidents) occurred in or near the circuit area, with two-thirds of these involving aircraft on final approach or the base-to-final turn.

<sup>&</sup>lt;sup>6</sup> The ATSB obtained recordings of the CTAF transmissions and all broadcasts made by the pilots of RQZ and ESZ were recorded.

A pilot's guide to staying safety in the vicinity of non-towered aerodromes is available at www.atsb.gov.au/publications/2008/ar-2008-044(1).aspx.

This incident highlights the importance of using both unalerted and alerted see-and-avoid principles and maintaining a vigilant lookout at all times. It also emphasis the benefits of transponders, which can assist pilots of TCAS equipped aircraft with their awareness of other traffic.

The Civil Aviation Safety Authority Civil Aviation Advisory Publication (CAAP) 166-1(1) states that:

Transponders can be detected by aircraft equipped with ACAS (TCAS), allowing them to 'see' other aircraft and take evasive action. Pilots of transponder-equipped aircraft should at all times ensure their transponder is switched to ON/ALT (Mode C), including when operating in the vicinity of a non-towered aerodrome.

A copy of the CAAP 166-1(1) is available at:

www.casa.gov.au/wcmswr/\_assets/main/download/caaps/ops/166-1.pdf

### **General details**

#### Occurrence details

Date and time:	26 August 2013 – 1845 EST		
Occurrence category:	Serious incident		
Primary occurrence type:	Airprox		
Location:	Archerfield Airport, Queensland		
	Latitude: 27° 34.22' S	Longitude: 153° 00.48' E	

#### Aircraft details: VH-RQZ

Manufacturer and model:	Cessna Aircraft Company		
Registration:	VH-RQZ		
Serial number:	17280980		
Type of operation:	Flying training – dual		
Persons on board:	Crew – 2	Passengers – Nil	
Injuries:	Crew – Nil	Passengers – Nil	
Damage:	Nil		

#### Aircraft details: VH-ESZ

Manufacturer and model:	Agusta, Spa, Construzioni Aeronautiche, AW139		
Registration:	VH-ESZ		
Serial number:	31125		
Type of operation:	Aerial work		
Persons on board:	Crew – 3	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.