



**Australian Government**

**Australian Transport Safety Bureau**

# Aircraft proximity event – Piper PA-34, VH-PWQ and Cessna R182, VH-JYG

Avalon airport, Victoria, 22 May 2012

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# Aircraft proximity event – Piper PA-34, VH-PWQ and Cessna R182, VH-JYG

AO-2012-071

## What happened

On 22 May 2012, a Piper PA-34-220T, registered VH-PWQ (PWQ), was being used to conduct training under the Instrument Flight Rules (IFR)<sup>1</sup> at Avalon airport, Victoria. At about 1600 Eastern Standard Time<sup>2</sup>, the instructor was monitoring a student conduct an Instrument Landing System (ILS)<sup>3</sup> approach to runway 18 while another student observed.

At about the same time, a Cessna R182, registered VH-JYG (JYG), was cleared by air traffic control (ATC) to conduct a pipeline survey through the Avalon area under Visual Flight Rules (VFR)<sup>4</sup>. On board were the pilot and an observer. The survey required JYG to cross the extended centreline of runway 18, just south of the Princes Freeway (Figure 1). The survey flight was conducted once a month and, as it was not shown on any aeronautical chart, the operator had previously provided a map of the survey track to Airservices Australia (Airservices), the providers of air traffic services (ATS) in that area.

The airspace around Avalon airport was designated as Class D<sup>5</sup> and ATS were being provided with the assistance of radar surveillance. Both aircraft had been identified on radar by the air traffic controller (controller) and had been given clearances. However, the clearance issued to JYG put the aircraft in conflict with PWQ.

At 1606, when the aircraft were 6 NM apart, the pilots of both aircraft acknowledged the following traffic information<sup>6</sup> provided by the controller:

*PWQ there is a VFR aircraft Cessna about 2 miles west of Avalon doing a pipeline survey not above 1,500 tracking northbound.*

*JYG did you copy PWQ it's a Seneca it's currently 4 miles north of Avalon at the moment inbound on the ILS at the minima will be overshooting to the west.*

A minute later, when the aircraft were 2 NM apart, the pilot of PWQ reported the other aircraft in sight but queried the controller on whether JYG would remain west of PWQ's track. With 0.8 NM separation, the controller provided PWQ with the following additional information:

Segment of Avalon airspace



Source: Airservices Australia

<sup>1</sup> Instrument flight rules (IFR) 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.

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

<sup>3</sup> Instrument Landing System (ILS) – a standard ground aid to landing, comprising two directional radio transmitters: the localizer, which provides direction in the horizontal plane; and the glideslope, for vertical plane direction, usually at an inclination of 3°. Distance measuring equipment or marker beacons along the approach provide distance information.

<sup>4</sup> Visual flight rules (VFR) are a set of regulations which allow a pilot to only operate an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.

<sup>5</sup> Within Class D, IFR aircraft are not separated from VFR aircraft, but are provided with traffic information about VFR flights. VFR aircraft are not provided a separation service but are provided with traffic information about all other flights.

<sup>6</sup> The Manual of Air Traffic Services (MATS) stated that traffic information must be concise and that reference information should be provided when traffic information related to positions or features not shown on enroute charts.

*PWQ negative they're tracking northbound on a pipeline survey.*

At 1607, the pilot of JYG reported sighting PWQ and, believing that a collision risk existed, transmitted he would '... climb to get out of the way.' The airprox<sup>7</sup> occurred at 1608 when the aircraft passed within 0.1 NM and 100 ft of each other.

Though both the pilot and observer on JYG were searching for PWQ, they had not seen it earlier as the other aircraft had been obscured by JYG's high wing.

Both aircraft were fitted with and were using strobe lighting. Neither aircraft was fitted with an Airborne Collision Avoidance System (ACAS)<sup>8</sup> nor was such fitment required.

The incident occurred during a handover between two controllers. Just prior to the airprox occurring, the controller handing over recognised the potential conflict. That controller made all radio transmissions until the handover was complete, about 30 seconds after the airprox.

### **Pilot comments**

The pilot of PWQ reported that, as his aircraft was established on the ILS and he had been cleared for the approach, he believed he would not be expected to manoeuvre to avoid traffic. As it was a precision approach, any change to altitude or track to avoid traffic would have resulted in PWQ no longer being established on the ILS and necessitating a missed approach. The pilot noted the high workload involved when conducting instructional IFR training and that the incident may have been more serious if PWQ had been in instrument meteorological conditions (IMC)<sup>9</sup> until 800 ft.

Further, the pilot of PWQ stated that the traffic information provided was not sufficient for him to understand the intended track of the VFR aircraft. Of particular concern to him was the controller's response when he queried whether the traffic would remain west of the centreline. The pilot of PWQ did not know the location of the pipeline and it was not marked on any aeronautical chart. Additionally, the intended track of the VFR aircraft was north-easterly, not northerly as advised twice by the controller.

The pilot of JYG had extensive experience in Class D airspace, both in the Avalon area and at other locations around Australia<sup>10</sup>. The pilot of JYG reported that he had expected to be given tracking advice to remain clear if his aircraft was going to conflict with an IFR aircraft, as this had occurred on previous occasions in Class D airspace.

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<sup>7</sup> Airprox – an occurrence in which two or more aircraft come into such close proximity that a threat to the safety of the aircraft exists, or may exist, in airspace where separation is a pilot responsibility.

<sup>8</sup> An Airborne Collision Avoidance System (ACAS) is an aircraft system that warns of the presence of other aircraft that present a threat of collision.

<sup>9</sup> Instrument meteorological conditions (IMC) describes weather conditions that require pilots to fly primarily by reference to instruments, and therefore under Instrument Flight Rules (IFR), rather than by outside visual references. Typically, this means flying in cloud or limited visibility.

<sup>10</sup> Class D airspace is established at 12 aerodromes around Australia.

Figure 1: Track of JYG (broken red) and PWQ (solid green) with ILS distances and heights (black text)



Source: Airservices Australia

**Safety alerts and traffic avoidance advice**

Safety alerts<sup>11</sup>, according to Manual of Air Traffic Services (MATS), should be issued when a controller becomes aware that an aircraft is in a situation that is considered to place it in unsafe proximity to terrain, obstructions, active restricted areas or other aircraft. In the absence of a safety alert, traffic avoidance advice should be provided when an aircraft in receipt of traffic information on another aircraft continues on a conflicting path and constitutes a collision hazard.

<sup>11</sup> Safety alert is the provision of advice to an aircraft when an ATS Officer becomes aware that an aircraft is in a position which is considered to place it in unsafe proximity to terrain, obstructions or another aircraft.

An amendment to MATS, effective on 28 June 2012, noted that a review of safety alerting and avoiding action had identified a disconnect between the importance of the information being assessed and passed and how the information was presented in the document. Changes in the amendment were the result of a review of relevant documentation from the International Civil Aviation Organization (ICAO) and the United Kingdom and were complementary to changes proposed in the Aeronautical Information Publication (AIP)<sup>12</sup>.

The amended version of MATS included the following:

*In surveillance coverage, issue avoiding action advice when you become aware that an aircraft is in a situation that is considered to place it at risk of a collision with another aircraft.*

*You may issue Safety Alerts in all classes of airspace both within and outside ATS surveillance system coverage.*

### **Pilot responsibilities within Class D**

When operating in Class D airspace, pilots must advise the controller if they are unable to see, or if they lose sight of, other aircraft notified as traffic and must maintain their own separation from that traffic.

### **ATSB comment**

Both PWQ and JYG had been identified by the controller and neither changed course on receipt of the traffic advice. PWQ only reported sighting the other aircraft 30 seconds before their closest point of passing and JYG reported sighting 10 seconds prior to that point.

### **Safety message**

#### **Air traffic control**

Traffic information must be concise, but it needs to include enough relevant reference information to enable the pilot to determine if action is required to avoid conflict. The recent amendments to MATS provided more detail on the provision of safety alerts in all classes of airspace and on when to issue avoiding action within surveillance coverage.

#### **Pilots**

In Class D, where separation is not provided between IFR and VFR aircraft, pilots need to be aware of the limitations of the see-and-avoid principle.

Pilots should be conscious of the dangers of expectation as this can limit both information processing and decision-making. The Civil Aviation Advisory Publication (CAAP) 5.59-1(0) titled *Teaching and Assessing Single-Pilot Human Factors and Treat and Error Management* is a useful document for a review of human factors.

*Limitations of the See-and-Avoid Principle* (1991) is available at:

[www.atsb.gov.au/publications/1991/limit\\_see\\_avoid.aspx](http://www.atsb.gov.au/publications/1991/limit_see_avoid.aspx)

CAAP 5.59-1(0) is available at:

[www.casa.gov.au/wcmswr/\\_assets/main/download/caaps/ops/5\\_59\\_1.pdf](http://www.casa.gov.au/wcmswr/_assets/main/download/caaps/ops/5_59_1.pdf)

Further information on Class D airspace, including the Class D airspace booklet and eLearning tutorials, is available from CASA at:

[www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD:611458872:pc=PC\\_93379](http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD:611458872:pc=PC_93379)

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<sup>12</sup> The AIP is a package of documents that provide the operational information necessary for the safe and efficient conduct of national (civil) and international air navigation throughout Australia and its Territories.

## Aircraft details

Manufacturer and model:	VH-PWQ: Piper Aircraft Corporation PA-34-220T VH-JYG: Cessna Aircraft Company R182	
Registration:	VH-PWQ VH-JYG	
Type of operation:	VH-PWQ: Flying training VH-JYG: Aerial work	
Location:	Avalon airport, Victoria	
Occurrence type:	Airprox	
Persons on board:	VH-PWQ: Crew – 2 VH-JYG: Crew – 2	Passengers – 1 Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
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.