



**Australian Government**

**Australian Transport Safety Bureau**

# Near collision between Piper PA-28, VH-XDI and ATR72, VH-FVR

Albury Airport, New South Wales, on 19 October 2019

**ATSB Transport Safety Report**  
Aviation Occurrence Investigation  
AO-2019-066  
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#### Addendum

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# Safety summary

## What happened

On 19 October 2019, a Piper PA-28-161, registered VH-XDI (XDI), operated by the Australian Airline Pilot Academy (AAPA), was inbound to Albury, New South Wales (NSW) from Wagga Wagga, NSW, on a training flight. The pilot was the only person on board. An ATR72-212A, registered VH-FVR (FVR), operated by Virgin Australia Airlines, was also inbound to Albury on a scheduled passenger flight from Sydney, NSW. There were two flight crew, two cabin crew and 66 passengers on board.

During the approach, the pilot of XDI turned on to the base leg of the circuit in front of FVR. The crew of FVR received a traffic collision avoidance system (TCAS) traffic advisory (TA) and conducted a missed approach to increase separation. Separation between the two aircraft reduced to about 110 metres horizontally and 75 feet vertically.

## What the ATSB found

The ATSB found that the pilot of the PA-28 did not sight the ATR aircraft, which the controller had instructed them to follow, and did not advise the controller they did not have the aircraft sighted before turning in front of the ATR aircraft, resulting in a near collision. The crew of the ATR were aware that there was traffic in the area but did not assess the position of the PA-28, in relation to their aircraft until activation of the TCAS TA.

The ATSB also identified that the air traffic controller did not confirm that the pilot of XDI correctly understood the planned method of sequencing the two aircraft by requiring readback of the instruction to sight and follow the ATR, nor did they seek confirmation that it had been sighted. The controller did not identify the developing near collision as they were not effectively monitoring the aircraft in the circuit area due to their attention being focussed on another aircraft.

## What's been done as a result

Following this occurrence AAPA implemented additional controls for students operating to Albury Airport. The academy also took action to ensure their pilots receive additional education and training on procedures for airports in Class D airspace (controlled airspace that surrounds general aviation and regional airports equipped with a control tower such as Albury) and complete training on air traffic control clearance requirements and compliance.

Virgin Australia have reminded all their crews of the separation that is provided in Class D airspace. Additionally, Virgin Australia and Airservices Australia have begun discussions to convene a cross industry stakeholder meeting to include operators, Civil Aviation Safety Authority, ATSB and the broader industry to discuss the ongoing risk to operations at non-controlled and airports in Class D airspace.

## Safety message

This serious incident illustrates the danger of assumption and incomplete situational awareness.

Although separation between the two aircraft was the pilots' responsibility on this occasion, the controller had recognised the potential conflict and implemented a plan to sequence their arrival. However, confirmation was not sought from the pilot assigned to follow the ATR that they understood the plan. Additionally, all parties made incorrect assumptions about the aircraft movements rather than taking positive action to confirm that adequate separation would be maintained.

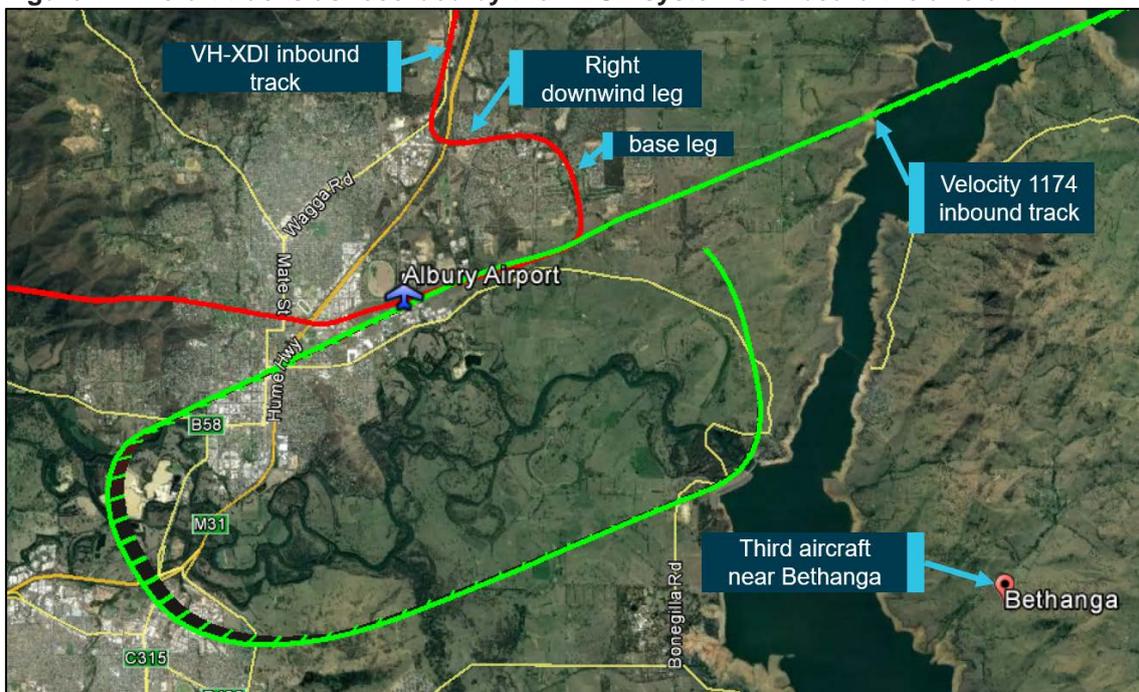
# The occurrence

## What happened

On the 19 October 2019, at 1100 Eastern Daylight-saving Time,<sup>1</sup> a Piper PA-28-161, registered VH-XDI (XDI), operated by Australian Airline Pilot Academy, was inbound to Albury, New South Wales (NSW), from Wagga Wagga, NSW. The pilot was conducting a training flight and was the only person on board. At the same time, a Virgin Australia Airlines ATR72-212A, registered VH-FVR and operating as Velocity 1174, was also inbound to Albury on a scheduled passenger flight from Sydney, NSW. On board the aircraft were two flight crew, two cabin crew and 66 passengers.

The pilot of XDI contacted the controller and was cleared to enter Albury airspace from the north via Holbrook at 3,500 ft, below a broken cloud base at 4,000 ft but with visibility in excess of 10 km. While the aircraft was inbound, the crew of Velocity 1174 contacted the controller and was cleared to conduct an RNAV Z RUNWAY 25 approach.

**Figure 1: Aircraft tracks as recorded by the ADSB systems on-board the aircraft**



*Image shows the inbound tracks of VH-XDI joining a right circuit and Velocity 1174 conducting a straight-in approach. The area a third aircraft was operating is also marked.*

Source: Airservices Australia, Google Earth - annotated by ATSB.

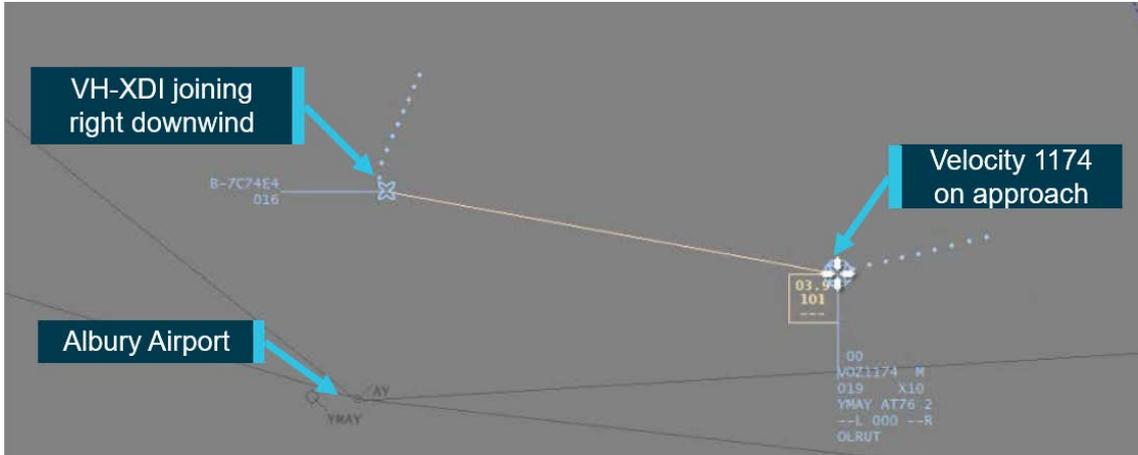
At approximately 1118, another aircraft (Aircraft 3) departed Albury on a local scenic flight towards Bethanga (Figure 1). Shortly afterwards, the controller tried to contact the pilot of XDI and after not receiving a response, they attempted contact a second time. This time the pilot responded and was instructed to join the mid-downwind leg of the right circuit for runway 25. The pilot was then provided with an onwards clearance after the touch-and-go landing. Immediately after this, the crew of Velocity 1174 advised the controller that they were at the final waypoint<sup>2</sup> and the controller cleared them to land.

<sup>1</sup> Eastern Daylight-saving Time (EDT): Coordinated Universal Time (UTC) + 11 hours.

<sup>2</sup> Waypoint: A defined position of latitude and longitude coordinates, primarily used for navigation.

The controller subsequently advised the pilot of XDI that ‘...you’re number two following an ATR on about a four-mile final, report traffic in sight’. The pilot acknowledged the instruction by advising the aircraft’s callsign but did not repeat any part of the instruction back to the controller. About 40 seconds later, XDI joined the downwind leg (Figure 1) for a right circuit to runway 25 (Figure 2).

**Figure 2: XDI turning downwind with Velocity 1174 on approach**

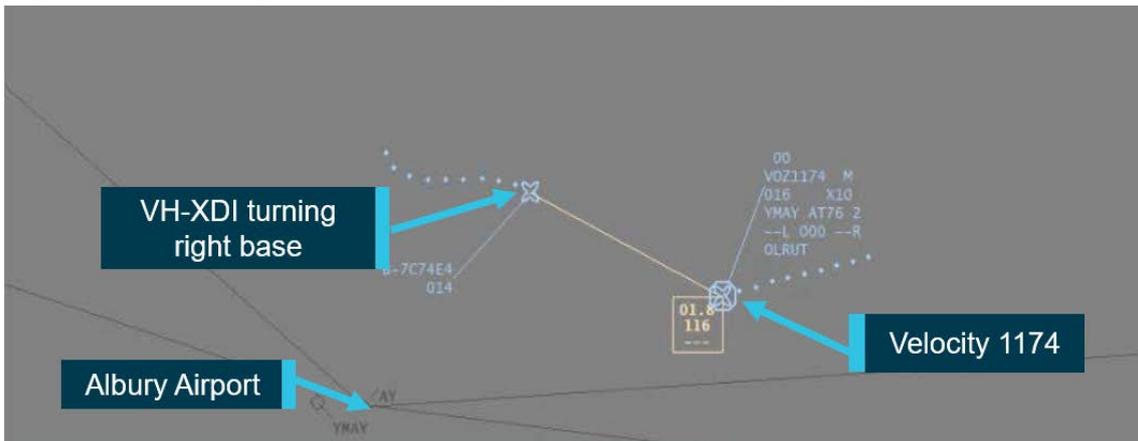


Source: Airservices Australia annotated by ATSB

After advising the pilot in XDI to report sighting the ATR and observing the aircraft join downwind, the controller diverted their attention to Aircraft 3 to ensure that aircraft did not pass in front of the ATR. The pilot of the third aircraft advised the controller that they had the Virgin aircraft sighted shortly after XDI turned on to downwind. The controller acknowledged this and requested that the pilot report with their intentions at Bethanga.

The controller advised the ATSB that, due to their focussed attention on the third aircraft, they were not monitoring XDI as the aircraft continued on the downwind leg and turned on to the normal base leg of the circuit (Figure 1). At that point the pilot of XDI had not sighted the ATR or advised the controller that they did not have it sighted (Figure 3).

**Figure 3: XDI turning base with Velocity 1174 on about 3 km (1.8 NM) final**



Source: Airservices Australia annotated by ATSB

As Velocity 1174 passed approximately 600 ft above ground level (AGL), the crew received a traffic collision avoidance system<sup>3</sup> traffic advisory (TCAS TA)<sup>4</sup> and, in response, began to visually acquire the aircraft causing the alert. They quickly identified the PA-28 below them; the aircrafts’

<sup>3</sup> Traffic alert and collision avoidance system (TCAS): a type of airborne collision avoidance system (ACAS).

<sup>4</sup> Traffic advisory (TA): an alert issued by an airborne collision avoidance system (ACAS) when the detected traffic may result in a conflict. Pilots are expected to initiate a visual search for the traffic causing the TA.

separation at that stage was about 111 metres (.06 NM) horizontal and 75 feet vertical. Due to the proximity of the two aircraft, the crew of Velocity 1174 immediately commenced a missed approach.

The controller reported not observing the near collision, only shifting attention back to the involved aircraft when the crew of the ATR reported the missed approach. This occurred 2 minutes and 14 seconds after the controller had instructed the pilot of XDI to report sighting the ATR. The controller advised that, as the ATR was already conducting a missed approach, a safety alert was not issued.

The pilot of XDI advised the ATSB that when Velocity 1174 was first sighted it was so close that the pilot lowered the nose of the aircraft to increase separation. The crew in Velocity 1174 was conducting a missed approach and passing above the PA-28 when the controller contacted the pilot of XDI and advised that their aircraft had turned in front of Velocity 1174 and requested the pilot's intentions. After the pilot of XDI acknowledged this request with registration only, the controller cleared the aircraft to land. However, due to an assessment by the pilot that the aircraft was too fast, a go-around was conducted. The controller then cleared XDI to depart the airspace.

### ***Pilot of XDI***

The pilot of XDI was an international student, completing flying training in Australia and had obtained a private pilot licence on the day before the incident (the pre-requisite aviation English Language Proficiency test had been successfully passed a few months before). On the day of the occurrence, the pilot was conducting a navigation exercise as part of the commercial pilot licence syllabus. The pilot had flown to Albury on a number of occasions, both with an instructor and solo.

The pilot reported understanding the controller's instructions during the incident flight, specifically the requirement to track as number two to the ATR. The ATSB reviewed recordings of the radio communications while XDI was inbound to Albury Airport. This review found that the radio transmissions from the controller and both Velocity 1174 and the third aircraft were spoken slowly and clearly, although the crew of Velocity 1174 referenced a radial and an inbound instrument flight rules (IFR)<sup>5</sup> waypoint that may not be familiar to some VFR pilots.

The pilot recalled that there was only one other aircraft operating in the circuit area (that is, the Velocity aircraft as per the controller's instructions) at the time, which indicated that they were unaware that the third aircraft had departed. The pilot was also unaware that the Velocity call sign was that of a commercial aircraft.

After joining downwind, the pilot assumed the crew of the aircraft to be followed (Velocity 1174) had sighted XDI. Before turning on to the base leg of the circuit, the pilot recalled carrying out normal visual checks to ensure the base and final legs were clear. The check did not involve looking along the long final flightpath, as the pilot assumed that Velocity 1174, which had been cleared to land before XDI joined downwind, was either on short final or had landed.

### ***Flight crew of FVR***

The flight crew of FVR had been operating in cloud, becoming visual at around 4,000 ft AGL. The first officer, who was the pilot monitoring,<sup>6</sup> advised being aware of another aircraft in discussion with the controller, but did not receive information on that aircraft and did not expect to, as the

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<sup>5</sup> Instrument flight rules (IFR): a set of regulations that permit the pilot to operate an aircraft in instrument meteorological conditions (IMC), which have much lower weather minimums than visual flight rules (VFR). 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>6</sup> Pilot Flying (PF) and Pilot Monitoring (PM): 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.

controller had instructed XDI to follow FVR in the circuit. They did not assess where the other aircraft was in relation to their approach.

The crew advised completing their required pre-landing checklists when the captain, who was the pilot flying, detected the TCAS TA. They immediately began scanning to visually acquire the aircraft. They advised that, as they sometimes received traffic advisories during approach from aircraft operating on the ground or at low level near an airport, they initially started looking on the runway surface. The TCAS display gave an indication that the aircraft was operating in the forward right quadrant from the aircraft. The first officer quickly identified the PA-28 on the base leg of the circuit and assessed that the aircraft, while very close, would pass behind them. The captain immediately initiated a missed approach.

The TCAS system was designed such that when the aircraft was on descent and passed below 900 ft AGL, the system would not generate a resolution advisory (RA) or an aural alert. The crew advised that they have regular training on responding to a TCAS RA, but have not discussed how to manage a TCAS TA during an approach when the aircraft is below 900 ft and the RA and aural warning functions were inhibited.

### ***Provision of separation in Class D airspace***

The controlled airspace around Albury Airport was classified as Class D airspace.<sup>7</sup> In accordance with the Manual of Air Traffic Services (MATS) 2.4.1.1, when operating in Class D airspace, controllers were required to provide separation between two or more aircraft operating under IFR, and between aircraft operating under IFR with aircraft operating under Special Visual Flight Rules (VFR).<sup>8</sup> There was no requirement to apply a separation standard between an aircraft operating under IFR with an aircraft operating under VFR.<sup>9</sup> There was, however, a separation standard applied to all aircraft operating on the runway.

The Aeronautical Information Publication (AIP) *En Route* 1.1 section 2.2.1 stated that an air traffic control (ATC) clearance was required for all flights operating in Class D airspace. MATS stated that the objective of an ATC clearance<sup>10</sup> (clearance) was 'to prevent collisions, and to expedite and maintain an orderly flow of air traffic'. Flight crews were required to follow all clearances and ATC instructions (instructions).<sup>11</sup>

*En Route* 1.4 section 2.2.1 stated that in the traffic circuit, pilots were 'required to position their aircraft in such a manner that, while complying with clearances and instructions from ATC, they maintain the necessary separation from other traffic'. *En Route* 1.1 section 2.13.1.4 stated that when a pilot was 'issued with a sequencing instruction, a pilot must follow the preceding aircraft and continue to do so unless otherwise instructed by ATC'. It also required that 'if the preceding aircraft cannot be sighted and identified, the pilot must advise ATC'. MATS section 10.8.1.4.3 stated that the controller should 'when necessary, obtain corroborative evidence from the pilot of one aircraft on the relative position of the second aircraft'.

MATS section 12.5.1 stated that 'significant traffic information' is required to be given to pilots, where applicable, when they request a clearance to enter the aerodrome traffic circuit. MATS defined 'traffic information' as 'information issued by an ATS unit to alert a pilot to other known or observed air traffic which may be in proximity to the position or intended route of flight and to help the pilot avoid a collision'. However, MATS 10.7.2.5 stated that traffic information should be

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<sup>7</sup> Class D airspace: Controlled airspace that surrounds general aviation and regional airports equipped with a control tower.

<sup>8</sup> Special VFR: A VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below visual meteorologic conditions.

<sup>9</sup> Visual flight rules (VFR): a set of regulations that permit a pilot to operate an aircraft only in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.

<sup>10</sup> Clearance: Authorisation for aircraft to proceed under conditions specified by an ATC unit.

<sup>11</sup> Instruction: Directives issued by ATC for the purpose of requiring a pilot to take a specific action.

provided where in the controller’s judgement, ‘one aircraft may observe the other aircraft either visually or by ACAS<sup>12</sup> and could be uncertain of the intention of that aircraft’.

**Visual separation methods**

MATS 10.7.2 permits the controller to base separation on the aircrafts’ projected flight paths, where the projected flight paths do not conflict. In this case, the controller observed one aircraft on straight-in final and observed the other turn on to the downwind circuit leg.

MATS 10.8.1 allows for the responsibility for visual separation to be assigned to the pilot. The controller passed traffic information in sufficient time and detail (ATR on 4 NM final) to enable the pilot of XDI to identify and maintain separation from FVR. MATS 10.1.5.2 advised that when the pilot acknowledged the instruction, they assumed responsibility for separation from FVR.

**Summary**

Apart from runway operations, there was no separation standard required between VFR and IFR aircraft operating in Class D airspace, but flight crew were required to follow the instructions provided by controllers. An instruction given by a controller is to prevent collisions, however, separation between aircraft was the responsibility of flight crew. While not applying separation standards, controllers use separation methods to ensure aircraft do not conflict. Additionally, traffic information should be passed in situations where the controller considers pilots may be uncertain of the intentions of a second aircraft.

**Clearance readback**

According to the AIP *General* 3.4–13 4.4 the pilot must read back ‘ATC clearances, instructions and information which are transmitted by voice’. According to MATS 9.2.2.13 ATC must ‘obtain a readback in sufficient detail that clearly indicates pilot’s understanding of and compliance with all ATC clearances, including conditional clearances, instructions and information which are transmitted by voice’.

Airservices Australia assessed that the pilot was not required to read back the instruction that XDI was ‘...number 2 following an ATR on about a four-mile final...’, and to ‘...report traffic in sight.’ as the pilot had acknowledged the instruction and did not request clarification. Readback requirements were detailed in MATS section 9.2.2.13 subsections 1 and 2:

- an ATC route clearance in its entirety, as well as any amendments
- en route holding instructions
- any route and holding point specified in a taxi clearance
- any clearances, or instructions to hold short of, enter, land on, line-up on, wait, take-off from, cross, taxi or backtrack on, any runway or helicopter landing site (HLS)
- assigned runway or HLS
- any approach clearance
- altimeter settings directed to specific aircraft, radio and radio navigation aid frequency instructions
- secondary surveillance radar codes, data link logon addresses
- level instructions, direction of turn, heading and speed instructions.

Airservices Australia advised that if the pilot of XDI had reported sighting the ATR, then they would have been issued a subsequent instruction to follow the aircraft, which would have been required to be read back.

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<sup>12</sup> Airborne Collision Avoidance System: Air system based on secondary surveillance radar (SSR) transponder signals which operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are equipped with SSR transponders.

## Previous occurrences

A search of the ATSB database revealed that between 1 January 2010 and 31 December 2019, there were three near collisions (including this occurrence) involving regular public transport (RPT) aircraft in the vicinity of an airport, below 2,000 ft. Two of these occurred on short final at Albury Airport in 2019.

## Safety analysis

The pilot of XDI understood the requirement to track as number two to the ATR, but was unaware Velocity 1174 was a transport category aircraft conducting a straight-in approach to the airport. The assigned traffic sequence was intended to ensure separation was maintained, and hence it is likely the controller assessed that XDI was not significant traffic for the ATR, and did not pass traffic information to its crew. Nevertheless, the crew of the ATR were aware that an aircraft was operating in the area, but did not visually assess the position of XDI in relation to their approach path until the activation of the TCAS TA.

As the ATR was cleared to land prior to the PA-28 entering the circuit area, the pilot of XDI assumed the ATR was either on short final or had landed before XDI turned on to the base leg of the circuit. Consequently, they did not check for aircraft on long final before turning base. However, when the pilot of XDI did not report sighting the ATR as expected, the controller was required to obtain corroborative evidence from the pilot on the position of the ATR. This was a missed opportunity by both the pilot and the controller to ensure separation was maintained.

While there was no requirement for the controller to provide separation between the two aircraft, the potential conflict between them had been identified by the controller and a plan established to sequence their approach. The controller passed responsibility for separation to the pilot of XDI with the instruction to sight and follow the ATR. However, they did not require the pilot of XDI to readback the instruction, removing the opportunity for the controller to confirm the pilot correctly understood the sequencing plan.

Additionally, once the instruction was given to the pilot of XDI, the controller focussed their attention on the third aircraft. This resulted in limited visual scanning of the ATR and PA-28, which in turn prevented visual identification of their developing proximity. In combination, these factors led to the near collision not being identified by the controller or the pilots until the crew of the ATR received the TCAS TA and reported commencing the missed approach.

## Findings

ATSB investigation report findings focus on safety factors (that is, events and conditions that increase risk). Safety factors include 'contributing factors' and 'other factors that increased risk' (that is, factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report for the purpose of increasing awareness and enhancing safety). In addition 'other findings' may be included to provide important information about topics other than safety factors.

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

From the evidence available, the following findings are made with respect to the near collision between Piper PA-28, VH-XDI and ATR72, VH-FVR at Albury Airport, New South Wales, on 19 October 2019.

### **Contributing factors**

- The pilot of the PA-28 did not sight the ATR aircraft, which the controller had instructed them to follow, and did not advise the controller they did not have the aircraft sighted before turning on to the base leg of the circuit in front of the ATR aircraft, resulting in a near collision.
- The crew of the ATR were aware that there was traffic in the area but did not assess the position of the PA-28, in relation to their aircraft until activation of the TCAS TA.
- The controller did not seek confirmation that the pilot of XDI had sighted the ATR before diverting attention to an aircraft outside the circuit area. This interrupted the effective monitoring of the aircraft in the area and the developing near collision was not identified.

### **Other factors that increased risk**

- The controller did not confirm the pilot of XDI correctly understood the planned method of sequencing the two aircraft.

### **Safety actions**

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.

Virgin Australia Airlines and Airservices Australia have commenced discussions to convene a cross industry stakeholder meeting to include operators, the Civil Aviation Safety Authority, ATSB and the broader industry to discuss the ongoing risk to operations at non-controlled and Class D airports. Virgin Australia Airlines also reiterated to their crews the separation that is provided within Class D airspace.

### **Australian Airline Pilot Academy**

Following this occurrence, AAPA conducted an internal investigation and implemented the following additional risk controls:

- regular face-to-face seminars have been organised between controllers at Albury Tower and new students to explain operations in Class D airspace before students complete their first solo flight to Albury
- a presentation on Albury Class D airspace has been prepared for inclusion in ground school together with a training package simulating ATC interactions and clearances
- additional approvals and briefings are required before a student can flying solo to Albury.

### **Sources and submissions**

#### **Sources of information**

The sources of information during the investigation included:

- the involved pilots and air traffic controller
- Australian Airline Pilot Academy
- Virgin Australia Airlines
- Airservices Australia

## **Submissions**

Under section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. That section allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the following directly involved parties:

- the involved pilots and air traffic controller
- Australian Airline Pilot Academy
- Virgin Australia Airlines
- Airservices Australia
- Civil Aviation Safety Authority

Submissions were received from:

- the involved air traffic controller
- Australian Airline Pilot Academy
- Virgin Australia Airlines
- Airservices Australia
- Civil Aviation Safety Authority

The submissions were reviewed and, where considered appropriate, the text of the report was amended accordingly.

# General details

## Occurrence details

Date and time:	19 October 2019 – 1124 EDT	
Occurrence category:	Serious incident	
Primary occurrence type:	Near Collision	
Location:	Albury Airport, New South Wales	
	Latitude: 36° 4.07' S	Longitude: 146° 57.48' E

## Aircraft details

Manufacturer and model:	Piper Aircraft Corp PA-28-161	
Registration:	VH-XDI	
Operator:	Australian Airline Pilot Academy	
Serial number:	2842301	
Type of operation:	Flying Training	
Departure:	Wagga Wagga, New South Wales	
Destination:	Wagga Wagga, New South Wales	
Persons on board:	Crew – 1	Passengers – N/A
Injuries:	Crew – 0	Passengers – N/A
Aircraft damage:	Nil	

## Aircraft details

Manufacturer and model:	ATR – Gie Avions De Transport Regional ATR72-212A	
Registration:	VH-FVR	
Operator:	Virgin Australia Airlines Pty Ltd	
Serial number:	1058	
Type of operation:	Passenger carrying	
Departure:	Sydney, New South Wales	
Destination:	Albury, New South Wales	
Persons on board:	Crew – 4	Passengers – 66
Injuries:	Crew – 0	Passengers – 0
Aircraft damage:	Nil	

## About the ATSB

The 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; 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 the ATSB's 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.

### Purpose of safety investigations

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the 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.