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Two aircraft proximity events at Ballarat airport

Ballarat Airport, Victoria, 4 August 2012

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Two aircraft proximity events at Ballarat airport

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What happened

The ATSB was advised of two aircraft proximity events at Ballarat Airport, Victoria on 4 August 2012, which occurred within a short period of time. The first incident involved VH-VSD and VH-VTA, while the second involved VH-VTJ and VH-PKH. Both incidents were witnessed by one observer on the ground. Some differences between the pilots' and observer's recollections of events could not be reconciled. Any radio broadcasts made by the pilots could not be verified as transmissions at Ballarat are not recorded.

Ballarat Airport

Source: *Airservices Australia*

VH-VSD and VH-VTA

Pilot recollection

The pilot of a Cessna 172S aircraft, registered VH-VSD (VSD), broadcast on the Ballarat common traffic advisory frequency (CTAF) advising that he was at 13 NM inbound. Shortly after, the pilot of a Cessna 172S aircraft, registered VH-VTA (VTA), also made a broadcast on the CTAF advising he was at 10 NM inbound. The pilot of VSD reported hearing the inbound call made by VTA and maintained a lookout for the aircraft.

VTA arrived overhead the airport, maintaining 3,000 ft AMSL. The pilot broadcast that he was on the non-active side[1] of runway 23, intending to join the circuit mid-field, on crosswind. He then commenced a descent to 2,500 ft above mean sea level (AMSL) (circuit height).

Shortly after, VSD arrived at the airport, maintaining 3,000 ft AMSL. The pilot broadcast advising that he was overhead and tracking to descend on the non-active side. He observed VTA on the non-active side, at a lower altitude.

The pilot of VTA then broadcast advising that he was joining the circuit, mid-field crosswind. At that time, the pilot believed there would be sufficient vertical separation from VSD.

The pilot of VSD reported that he observed VTA flying towards him, about 400-500 ft below and to his left. He stated that he made a slight right turn to maintain separation (Figure 1).

Observer

An observer[2], positioned at the refuelling point, initially reported sighting VSD and VTA on converging headings, with about 200 m horizontal separation. Both aircraft appeared to be maintaining about 1,000 ft above ground level (AGL). He then observed VSD pass 100-200 ft below VTA. The observer later spoke to the pilot of VTA, who indicated that he was not aware that an incident had occurred.

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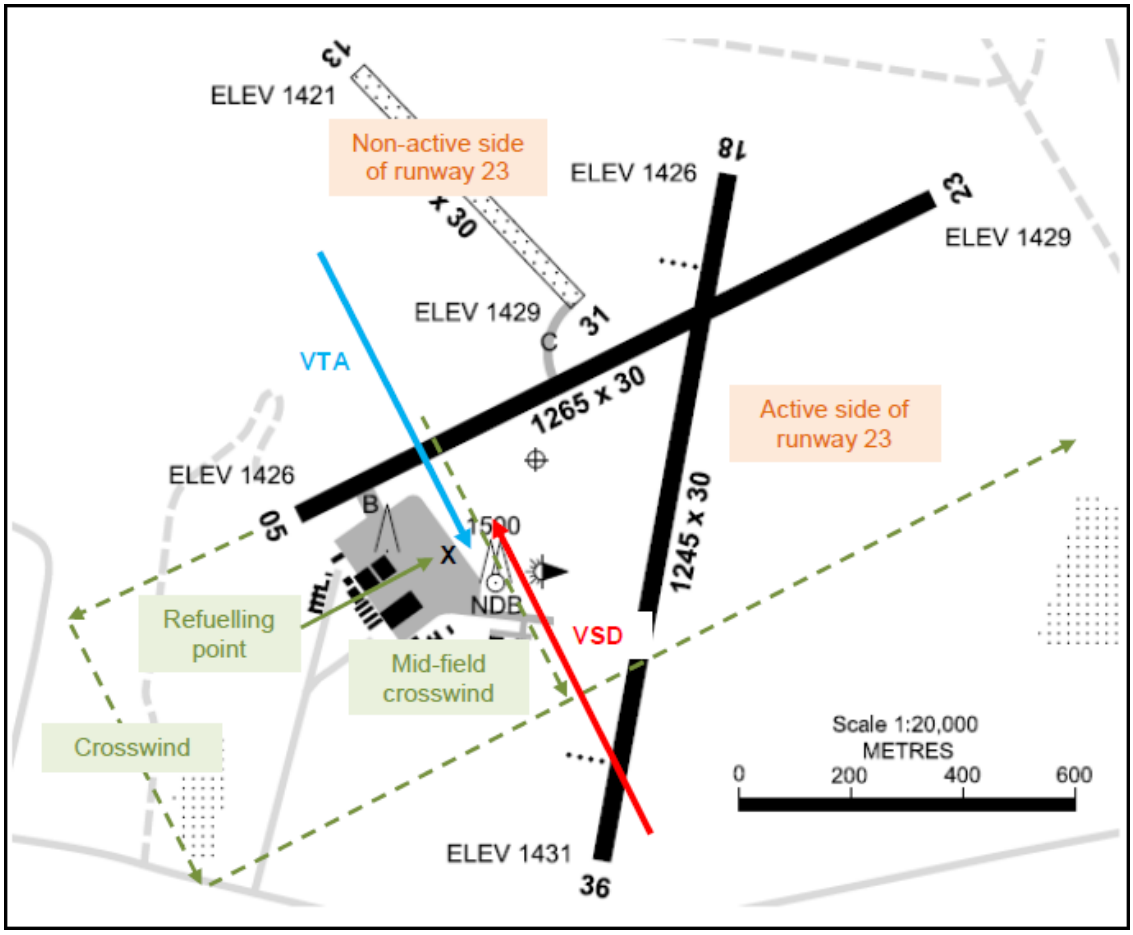
1 The side of the airport or active runway away from that of the circuit in use, or from which arriving aircraft join the circuit.

2 A pilot who regularly operated at Ballarat.

Surveillance data[3]

A review of Airservices Australia radar surveillance data did not identify VSD or VTA. However, at 1212 Eastern Standard Time[4], the data showed two aircraft overhead the airport on converging headings. The aircraft passed in close proximity, with about 0.2 NM lateral separation and 300 ft vertical separation.

Figure 1: Aircraft positions overhead the airport



Source: ***Airservices Australia***

VH-VTJ and VH-PKH

Pilot recollection

The pilot of a Cessna 172S aircraft, registered VH-VTJ (VTJ), broadcast on the CTAF advising that he was 10 NM to the west, inbound. Shortly after, he heard a broadcast from the pilot of a Cessna 172RG aircraft, registered VH-PKH (PKH), advising he was also inbound (Figure 2[5]).

VTJ was flown to the non-active side of runway 23 and a descent to 2,500 ft AMSL commenced. Soon after, the pilot observed PKH in his 9 o'clock[6] position and reported broadcasting a call

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[3] Radar surveillance data for Ballarat was provided by Airservices Australia. As the aircraft involved were operating outside controlled airspace under visual flight rules (VFR), they were not monitored by Airservices Australia or assigned a unique transponder code.

[4] Eastern Standard Time (EST) was Coordinated Universal Time (UTC) + 10 hours.

[5] Based on the pilots' recollection of events, the aircraft were identified using Airservices Australia surveillance data.

[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.

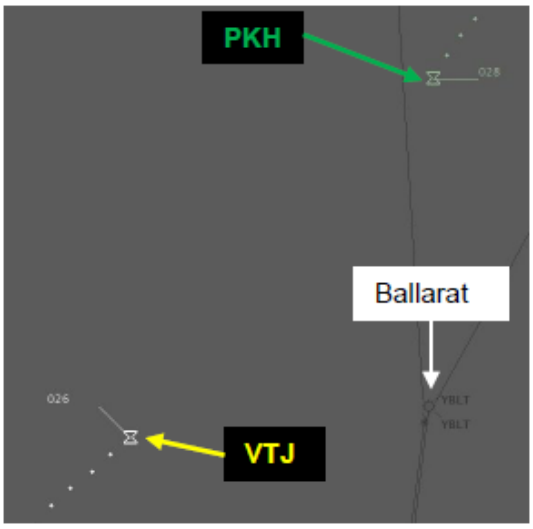
advising he was on the non-active side. The pilot believed that PKH would conduct an orbit and follow behind VTJ.

At about 1242, the pilot of VTJ stated that he broadcast another call advising he was joining the circuit, mid-field crosswind. He then observed PKH to his left, about 200-300 ft below and overtaking (Figure 3). The pilot of VTJ did not take any avoiding action, however, continued to monitor PKH. He further stated that he could not recall hearing a joining mid-field crosswind call from PKH.

The pilot of PKH reported that he did not hear any calls made by the pilot of VTJ, and was not aware that an incident had occurred. He further stated that he had made a broadcast advising he was joining the circuit, mid-field crosswind for runway 23.

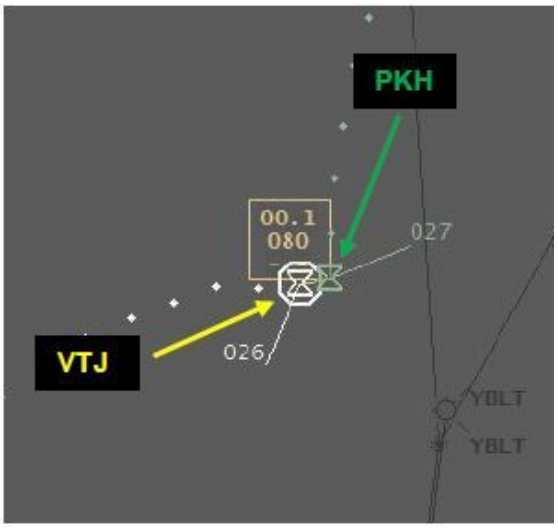
A review of Airservices Australia surveillance data indicated that the distance between VTJ (at 2,600 ft AMSL) and PKH (at 2,700 ft AMSL) reduced to 0.1 NM laterally and 100 ft vertically.

Figure 2: Aircraft positions at 1241



Source: *Airservices Australia*

Figure 3: Aircraft positions at 1242



Source: *Airservices Australia*

Observer

The observer on the ground reported that he was inside a building overlooking the apron when he heard (on a ground-based radio) the pilot of PKH broadcast a joining mid-field crosswind call. Shortly after, when looking out towards the apron, he observed several persons looking overhead the airport, pointing and shouting. The observer immediately went outside and saw VTJ and PKH on converging headings. PKH was observed to overtake VTJ, with the left wing of PKH passing underneath the right wing of VTJ. He then observed VTJ conduct a right turn and join the circuit behind PKH. The observer could not recall hearing a joining mid-field crosswind call from VTJ.

ATSB comment

The observer reported that, generally, there was a reasonable amount of aircraft activity at Ballarat, which was evident on the incident day. Aircraft movement data for Ballarat, supplied by the Civil Aviation Safety Authority, was compared with Airservices Australia movement data for towered airports[7] for the period 1 November 2009 to 31 October 2010. A review of that data showed that the level of activity at Ballarat was similar to that experienced at Townsville and Mackay (Queensland), and Essendon (Victoria).

[7] Airservices Australia movement data is only recorded during hours of tower operation, therefore, actual movements at non-24 hour locations may be higher than published.

An ATSB research report, '*A pilot's guide to staying safe in the vicinity of non-towered aerodromes*'[8] highlighted that the most hazardous phases of flight were within 5 NM of an aerodrome, below 3,000 ft, where traffic density is higher.

Safety message

It is crucial that pilots effectively broadcast and actively listen to the CTAF, and maintain a vigilant lookout at all times, to enhance traffic and situation awareness. This is particularly important when operating in a high traffic density environment. Furthermore, while pilots are expected to make a number of specific positional broadcasts, where a potential traffic conflict may exist, Civil Aviation Advisory Publication (CAAP) 166-1(1)[9] states that:

> '...radio broadcasts should be made as necessary to avoid the risk of a collision or an airprox event. A pilot should not be hesitant to call and clarify the other aircraft's position and intentions if there is any uncertainty.'

The following are a number of other aircraft proximity occurrences reported to the ATSB that have occurred at Ballarat:

- While on approach, the pilot of aircraft 1, heard a broadcast from the pilot of another aircraft (aircraft 2) advising he was also on final. Immediately after, the pilot of aircraft 1 observed aircraft 2 pass below, by about 100 ft (ATSB occurrence 201006276).
- The pilot of aircraft 1, joined the circuit, mid-field crosswind and made the appropriate broadcast. He then heard the pilot of another aircraft (aircraft 2) broadcast a 'go-around' call and immediately after, observed aircraft 2 pass below, by about 100 ft. While the pilot of aircraft 1 was aware of aircraft 2, he had expected aircraft 2 to be at a different position and altitude (ATSB occurrence 201104966).
- Aircraft 1 departed runway 36 and turned onto crosswind. Shortly after, another aircraft (aircraft 2) passed above, by about 30 ft. The pilot of aircraft 1 could not recall hearing any broadcasts by the pilot of aircraft 2 (ATSB occurrence 201206748).

Aircraft details

Occurrence 1

Manufacturer and model:	VH-VSD:	Cessna Aircraft Company 172S	
	VH-VTA:	Cessna Aircraft Company 172S	
Type of operation:	VH-VSD:	Flying training	
	VH-VTA:	Flying training	
Location:	Ballarat Airport, Victoria		
Occurrence type:	Aircraft separation		
Persons on board:	VH-VSD:	Crew – 1	Passengers – Nil
	VH-VTA:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil	
Damage:	Nil		

[8] www.atsb.gov.au/media/2097901/ar2008044(1).pdf

[9] Operations in the vicinity of non-towered (non-controlled) aerodromes (CAAP 166-1(1)) http://www.casa.gov.au/wcmswr/_assets/main/download/caaps/ops/166-1.pdf.

Occurrence 2

Manufacturer and model:	VH-PKH:	Cessna Aircraft Company 172RG	
	VH-VTJ:	Cessna Aircraft Company 172S	
Type of operation:	VH-PKH:	Private	
	VH-VTJ:	Flying training	
Location:	Ballarat Airport, Victoria		
Occurrence type:	Aircraft separation		
Persons on board:	VH-PKH:	Crew – 1	Passengers – 3
	VH-VTJ:	Crew – 1	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 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.