

**Aviation Safety Investigation Report
199401095**

**Cessna Aircraft Company
Titan
Piper Aircraft Corp
Chieftain**

24 April 1994

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NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 199401095 **Occurrence Type:** Incident
Location: 46km SW Canberra
State: ACT **Inv Category:** 4
Date: Sunday 24 April 1994
Time: 1706 hours **Time Zone** EST
Highest Injury Level: None

Aircraft Manufacturer: Cessna Aircraft Company
Aircraft Model: 404
Aircraft Registration: VH-ARQ **Serial Number:** 4040219
Type of Operation: Air Transport Domestic Low Capacity Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Canberra ACT
Departure Time: 1656 EST
Destination: Albury NSW

Aircraft Manufacturer: Piper Aircraft Corp
Manufacturer:
Aircraft Model: PA-31-350
Aircraft Registration: VH-MZI **Serial Number:** 31-8152131
Type of Operation: Air Transport Domestic Low Capacity Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Albury NSW
Departure Time: 1634 EST
Destination: Canberra ACT

Approved for Release: Friday, February 3, 1995

Factual information

VH-MZI departed Albury at 1634 EST on a flight to Canberra. The aircraft was maintaining 9,000ft and the pilot contacted Canberra approach control (APP) prior to the control area (CTA) boundary for an airways clearance, advising that he was on the 238 degree radial of the Canberra VOR. This was north of the nominated track (the 234 degree radial) and was due to conflicting traffic outside controlled airspace. The fact that VH-MZI had reported north of the nominated track was not assimilated by the approach controller.



Canberra Approach and Departures control were being operated in the combined mode at the time of the incident due to the low volume of air traffic. The controller performing both functions was positioned at the approach console and had set the approach radar display on the 40 NM range and the departure control console radar display on the 80 NM range. He issued an airways clearance for VH-MZI to enter control area on track direct to Canberra at 9,000ft and identified the aircraft on the radar display at approximately 50-55 NM from Canberra. This identification was made on the departure control radar but, with the 80 NM range selected, the display did not readily indicate that VH-MZI was offset four degrees from the nominal track.

VH-ARQ departed Canberra for Albury at 1656 and had been processed by APP to intercept the flight planned route (234 radial) on climb to 8,000ft.

At 1704, the pilot of VH-MZI requested descent for his arrival at Canberra and was cleared to descend to 4,000ft, maintaining terrain clearance by visual reference to the ground. At the same time, the controller issued VH-MZI a radar vector right to heading 090 degrees with the intent of ensuring radar separation between VH-MZI and VH-ARQ. The controller had still not noticed that VH-MZI was north of the nominal track. Consequently, the vector on to heading 090 turned that aircraft across the flight path of VH-ARQ instead of resolving the 'nose to nose' confliction.

At 1704.40 the pilot of VH-ARQ reported level at 8,000ft. At approximately 1705, the controller checked his 40NM range radar screen and realised that the radar separation between VH-MZI and VH-ARQ was nearing the minimum of 5 NM.

At 1705.50, in response to a request from the approach controller, the pilot of VH-MZI reported his altitude as 8,300 ft. Seven seconds later, the approach controller asked the pilot of VH-ARQ to sight VH-MZI passing five miles ahead of him. The pilot reported that he had the other aircraft in sight and later said that he thought the distance was nearer to two miles than five. The pilot of VH-MZI also sighted VH-ARQ at approximately the same time and also thought the distance to be approximately two miles. Both pilots commenced avoiding action at this time by turning right.

Radar analysis showed that the aircraft passed within 800m at the same level and with a closing speed in excess of 300 knots. This occurred at 1706.16, eight seconds after the controller had initiated the request for the pilot to maintain his own separation. The required separation standard was 5 NM horizontally by radar, or 1,000ft vertically. An instruction to a pilot to sight traffic and maintain separation visually is a valid option for a controller but it must be exercised in sufficient time to enable the pilot to position his aircraft relative to the traffic.

Controllers on duty at the time of the occurrence considered the radar display to be of poor quality. They stated that it was "blurry", "fuzzy" and "swimming" during the period surrounding the occurrence. The display was suitable for separation purposes but did not allow ready differentiation between an aircraft on-track and an aircraft a few degrees off-track.

Significant factors

1. The radar display was such that small track deviations were not readily discernable on the 80 NM range scale.
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2. The approach/departures controller did not assimilate the fact that the pilot of VH-MZI reported on the 238 degree radial of the Canberra VOR in lieu of the expected track of the 234 degree radial.

3. The radar vector given to VH-MZI turned that aircraft across the flight path of the other aircraft.

