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# Aircraft proximity event, VH-VOQ and VH-VQS Launceston Aerodrome, Tasmania 1 May 2008

## Abstract

On 1 May 2008 at about 2216 Eastern Standard Time, an Airbus Industrie A320 aircraft, registered VH-VQS, was conducting the runway 32L (left) instrument landing system missed approach procedure at Launceston Aerodrome, Tasmania. During the climb, the A320 came into close proximity with a Boeing Company 737 that was manoeuvring at 3,100 ft above mean sea level about 5 NM (9 km) to the north-west of the aerodrome. The lateral separation between the aircraft reduced to within 3 NM (5 km) and zero vertical separation as the A320 climbed through 3,100 ft. No Traffic Alert and Collision Avoidance System alerts were generated during the occurrence.

Both aircraft were operating scheduled passenger services from Melbourne, Victoria and had arrived at Launceston outside the normal operating hours of the Launceston air traffic control tower. Separation between the aircraft was therefore the responsibility of the respective flight crews. In this instance, a breakdown in the communication and interpretation of the respective flight crews' separation planning contributed to the proximity event.

## FACTUAL INFORMATION

On 1 May 2008 at about 2202 Eastern Standard Time<sup>1</sup>, a Boeing Company 737-8FE (737) aircraft,

registered VH-VOQ, commenced the runway 32L (left) instrument landing system (ILS) approach at Launceston Aerodrome, Tasmania. The aircraft, with two flight crew, four cabin crew and 115 passengers, was being operated on a scheduled passenger service from Melbourne, Victoria. Following the 737 by about 6 minutes, was an Airbus Industrie A320-232 (A320) aircraft, registered VH-VQS with two flight crew, four cabin crew and 95 passengers; also operating a scheduled passenger service from Melbourne.

Both aircraft were being flown in accordance with the instrument flight rules (IFR) and, prior to leaving controlled airspace at flight level (FL)<sup>2</sup> 125 for the descent to Launceston, had been under the control of the Melbourne enroute air traffic services (ATS) controller. The aircraft had been provided with mutual traffic information and on a departing IFR aircraft.

The provision of air traffic control tower services at Launceston ceased at 2145, the scheduled closing time, and the airspace was reclassified as Class G<sup>3</sup>. The aircraft were therefore operating under common traffic advisory frequency (CTAF)<sup>4</sup> procedures. In accordance with those procedures, flight crews of radio-equipped aircraft should

2 Level of constant atmospheric pressure related to the datum of 1013.25 hPa, expressed in hundreds of feet. FL125 equated to 12,500 ft above mean sea level (AMSL).

3 Non-controlled airspace in Australia is classified as Class G. In Class G airspace, IFR flights received traffic information and a flight information service.

4 The frequency on which pilots operating at a non-tower aerodrome should make positional radio broadcasts.

1 The 24-hour clock is used in this report to describe the local time of day, Eastern Standard Time (EST), as particular events occurred. Eastern Standard Time was Coordinated Universal Time (UTC) + 10 hours.

communicate by making prescribed broadcasts on the CTAF. Recorded ATS data indicated that the radio broadcasts by both flight crews were in accordance with the published requirements. If the aircraft equipment allowed, a listening watch was also maintained on the Melbourne Centre radio frequency (Melbourne Centre).

The forecast weather for Launceston indicated the likelihood of fog for the arrival, and the crew of a departing aircraft reported the cloud conditions as overcast at 200 ft above ground level. Because of the presence of low cloud, both crews elected to carry out the runway 32 L ILS approach. As the decision height<sup>5</sup> for the procedure was similar to the actual cloud base, both crews were aware that the requirement for a missed approach<sup>6</sup> was highly likely.

The 737 crew conducted the ILS approach and, when unable to gain the required visual reference for landing, carried out the published missed approach procedure, which was to track 313° magnetic to the north-west, and to climb to 3,100 ft. When asked by the A320 crew to advise of the intended manoeuvring altitude of the 737, the 737 crew advised that they would maintain 3,100 ft, but continue on the missed approach track ‘... for another 10 miles [19 km] just to keep us clear of you...’. The A320 crew acknowledged the 737 crew’s intentions and advised that, if they were required to conduct a missed approach, they would climb to 3,100 ft and arrange further separation. That was acknowledged by the 737 crew.

As advised, the 737 continued on track for about 10 NM (19 km) before making a turn to enter a pilot-determined<sup>7</sup> left holding pattern. The outbound leg of that pattern took the aircraft back toward the airport at a not below height of 3,100

ft. Meanwhile, the crew of the A320 descended via the ILS to the decision height where the crew, who were also unable to gain the required visual reference, commenced the missed approach.

Climbing through about 2,000 ft, the A320 cleared the cloud and the crew observed the lights of the 737 in their 11 o’clock position<sup>8</sup>. The 737 crew were turning left to fly the inbound leg of their holding pattern and, being aware of the A320, the copilot made a broadcast updating their position. That position was closer than the 10 NM (19 km) they had inferred earlier (Figure 1). The horizontal separation between the aircraft at that time was about 5 NM (9 km) and, although the horizontal distance subsequently closed to about 2.8 NM (5 km), the rate of closure also decreased as the 737 continued the left turn (Figure 1).

Almost concurrently, the enroute controller observed on radar that the two aircraft were relatively close, and made a broadcast on Melbourne Centre questioning whether the two crews were communicating with each other. At that stage, the A320 was climbing at a rate of about 3,000 ft/min, and the crew decided to continue to climb through the 737’s level while maintaining visual separation. They could not safely fly below 3,100 ft, which was the minimum sector altitude<sup>9</sup> and, although the 737 was turning away at that stage, their lateral separation was decreasing.

The flight crew of the A320 levelled off at an altitude of 4,100 ft and communicated their intention to remain at that altitude until the 737 had completed a second ILS approach.

The cloud base at Launceston lifted sufficiently to allow the 737 crew to land from that approach.

The A320 landed shortly afterwards.

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5 The height at which a missed approach must be initiated if the required visual reference to continue the approach to land was not available.

6 A missed approach (otherwise known as a go-around) is part of an instrument approach procedure to be executed when a safe landing cannot be established from the approach.

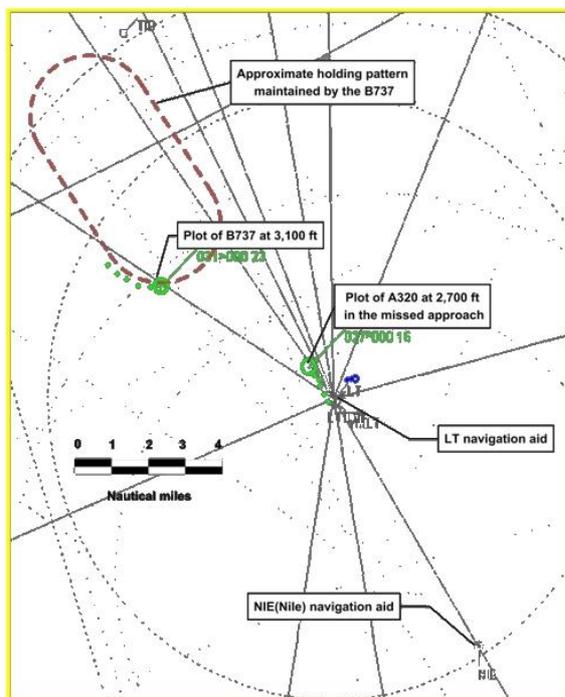
7 Flight crew can manually enter several key parameters into the aircraft’s flight management computer (FMC) which then computes a holding pattern and executes the instructions.

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8 Pilots used the 12 hours of the clock to describe the location of objects. The nose of the aircraft was represented by the ‘12 o’clock’ position, moving clockwise to the tail of the aircraft, which was ‘6 o’clock’, and so on.

9 Minimum Sector Altitude (MSA) was the lowest altitude that was able to be used and ensured a minimum clearance of 1,000 ft (300 m) above all objects located within the defined area.

Figure 1: Recorded radar data



## Personnel information

### *Flight crew of the 737*

The 737 flight crew was qualified for the flight and reported that they were adequately rested and medically fit. Earlier that day, the crew completed two sectors from Melbourne to Adelaide, South Australia and return. The flight to Launceston was their last sector of the day.

### *Flight crew of the A320*

The A320 crew was appropriately qualified for the flight and reported that they had no issues with workload, health or fatigue. Both pilots had been requested to fly on a rostered day off due to a technical fault with another aircraft. The sector to Launceston was their first flight of the day.

## Traffic alert and collision avoidance system

The Traffic Alert and Collision Avoidance System (TCAS) is an aircraft system designed to independently alert flight crews to possible conflicting traffic. TCAS identifies a three dimensional airspace around the aircraft based upon the closure rate of other traffic and, if both the vertical and horizontal parameters are satisfied, TCAS would generate a visual and aural

alert. It was determined that in this incident, the combination of the aircrafts' range and closure rate, and of their altitude separation and combined vertical speeds, were outside the parameters required to generate a TCAS warning in either aircraft. The flight crews of both aircraft confirmed that a TCAS alert was not generated during the incident.

## Organisational information

### *Operators' operations manuals*

In respect of operations in non-controlled airspace, the 737 operator's operations manual, in part, contained the following guidelines:

Crews should be conservative when separating their aircraft from other aircraft, in particular, opposite direction jet traffic. Either positive altitude separation or track deviation must be coordinated between the conflicting aircraft.

In regard to traffic separation in uncontrolled airspace, the A320 operator's operations manual, in part, contained the following guidelines:

Flight crew are expected to take a proactive role in traffic separation.

Flight crew must be conservative when separating their aircraft from other traffic.

A minimum of 1,000 ft vertical separation should be maintained until sighting and passing conflicting traffic.

Where vertical separation is not possible, lateral separation is acceptable, remembering that flight crew will have to take into account the level of accuracy of the navigation equipment onboard each aircraft.

## Flight crew comments

Operations in Class G airspace were reported to be a familiar and regular aspect of each crew's operations.

### *737 crew*

The 737 crew stated that, as the A320 had commenced an approach, a safe course of action was to continue on the missed approach track to about 10 NM (19 km) and to hold in that position. The crew recalled being unsure of the A320 crew's intentions following a possible missed approach.

While in the holding pattern, the 737 crew were aware of the A320 on their aircraft's TCAS display,

and sighted the A320 when it climbed through the cloud. The flight crew of the 737 was confident with the separation arrangements between the two aircraft.

#### *A320 crew*

Prior to conducting the ILS approach, the flight crew of the A320 sought the intentions of the 737 crew when they commenced the missed approach. The A320 crew's understanding was that the 737 would maintain a lateral separation of about 10 NM (19 km) from their aircraft during the missed approach. As such, they turned their attention back to the ILS approach procedure.

The flight crew of the A320 commented that, when they subsequently broke cloud during the missed approach, the 737 was closer than they expected. The flight crew of the A320 decided that the safest course of action was to continue the climb to above the 737.

## **ANALYSIS**

The authorised closure of the Launceston Airport control tower at the time, and lack of any requirement for Melbourne Centre to monitor flights into Launceston, meant that responsibility for separation assurance rested solely with the respective flight crews.

Despite the reliance by the 737 flight crew on lateral rather than vertical separation, the action to enter a pilot-determined holding pattern in the chosen location, meant that their aircraft would track closer to the airport than the inferred 10 NM (19 km). By not communicating their exact intentions to the crew of the A320, the 737 crew denied the A320 crew a valuable opportunity to enhance their situational awareness in preparation for the missed approach.

When the flight crew of the 737 announced their intention to remain at 3,100 ft, the A320 crew was about to commence the ILS approach. In that case, there would have had little time to fully consider the implications of the 737 maintaining that minimum sector altitude on or near the missed approach track. The flight crew of the A320 accepted the arrangement, planning further separation at 3,100 ft if there was a need for a missed approach. That decision, although based on the understanding that they would have

adequate lateral separation from the 737, increased the likelihood of a conflict.

Despite the crews' awareness of each other's positions and altitudes, and the high probability that the flight crew of the A320 would have to conduct a missed approach, each placed sole reliance on the application of lateral separation. There were other options to ensure separation; including but not limited to the application of vertical separation, but those options were not pursued.

The investigation could not determine to what extent the respective flight crews' workloads influenced the occurrence. It was possible that the relatively high workload associated with an instrument approach, in addition to added distractions such as considering possible diversions, adversely affected the ability of either crew to identify the developing loss of separation assurance.

## **FINDINGS**

From the evidence available, the following findings are made with respect to the loss of separation assurance that occurred on 1 May 2008, and involved Boeing Company 737-8FE aircraft, registered VH-VOQ and Airbus Industrie A320-232 aircraft, registered VH-VQS. They should not be read as apportioning blame or liability to any particular organisation or individual.

### **Contributing safety factors**

- The 737 crew did not adequately communicate their intentions regarding separation in the event of the crew of the A320 carrying out a missed approach.
- The A320 crew accepted the proposed method of separation undertaken by the 737 crew.

### **Other key findings**

- The responsibility for separation assurance rested with both flight crews.

## SOURCES AND SUBMISSIONS

### Sources of Information

The sources of information during the investigation included:

- the flight crew of VH VOQ
- the flight crew of VH-VQS
- the aircraft operators
- Airservices Australia (Airservices).

### Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003*, the Australian Transport Safety Bureau (ATSB) may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act 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 Civil Aviation Safety Authority, the aircraft operators, the flight crews and Airservices. Submissions were received from the aircraft operators and the flight crews. The submissions were reviewed and, where considered appropriate, the text of the report was amended accordingly.