Australian Government
Australian Transport Safety Bureau

ATSB TRANSPORT SAFETY INVESTIGATION REPORT

Aviation Occurrence Report – 200603111

Final

Breakdown of separation
17 km west of Melbourne Airport
31 May 2006

VH-VBH

Boeing Company 737-7Q8

VH-UJA

Aero Commander Division 680-FL

Australian Government

Australian Transport Safety Bureau

ATSB TRANSPORT SAFETY INVESTIGATION REPORT

Aviation Occurrence Report
200603111

Final

Breakdown of separation
17 km west of Melbourne Airport
31 May 2006
VH-VBH
Boeing Company 737-7Q8
VH-UJA
Aero Commander Division 680-FL

Published by: Australian Transport Safety Bureau
Postal address: PO Box 967, Civic Square ACT 2608
Office location: 15 Mort Street, Canberra City, Australian Capital Territory
Telephone: 1800 621 372; from overseas + 61 2 6274 6590
Accident and serious incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6274 6474; from overseas + 61 2 6274 6474
E-mail: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

ISBN and formal report title: see 'Document retrieval information' on page iii.

DOCUMENT RETRIEVAL INFORMATION

Report No.	Publication date	No. of pages	ISBN
2006003111	13 March 2007	12	978 1 921164 49 1

Publication title

Breakdown of separation – 17 km west of Melbourne Airport – 31 May 2006 - VH-VBH, Boeing Company 737-7Q8, VH-UJA, Aero Commander Division 680-FL

Prepared by

Australian Transport Safety Bureau
PO Box 967, Civic Square ACT 2608 Australia
www.atsb.gov.au.

Reference No.

Mar2007/DOTARS 50162

Acknowledgements

Appendix A: Departures and Approach chart showing the runway 27 DOSEL 3 standard instrument departure was provided by Airservices Australia.

Abstract

On 29 May 2006 at about 0805 Eastern Standard Time, a Boeing Company 737-7Q8 aircraft (737) passed within 400 ft vertically of an Aero Commander 680-FL (Aero Commander) aircraft. At that time there was less than the minimum 3 NM radar separation standard or the 1,000 ft vertical separation standard between the two aircraft.

The 737 departed Melbourne Airport tracking to the north and then to the north-east of Melbourne on a runway 27 DOSEL 3 standard instrument departure (SID). The Aero Commander became airborne off runway 35 at Essendon. The pilot of the Aero Commander was instructed to track overhead Melbourne Airport and climb to 3,000 ft. From overhead Melbourne Airport, the pilot was instructed to fly a heading of 310 degrees magnetic.

The pilot of the Aero Commander advised the departures controller that he had the 737 in sight. However, there was a breakdown of separation standards because the departures controller did not comply with the requirements of the Manual of Air Traffic Services (MATS) when he assigned separation responsibility to the pilot of the Aero Commander.

THE AUSTRALIAN TRANSPORT SAFETY BUREAU

The Australian Transport Safety Bureau (ATSB) is an operationally independent multi-modal Bureau within the Australian Government Department of Transport and Regional Services. ATSB investigations are independent of regulatory, operator or other external bodies.

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. Accordingly, the ATSB also conducts investigations and studies of the transport system to identify underlying factors and trends that have the potential to adversely affect safety.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and, where applicable, relevant international agreements. The object of a safety investigation is to determine the circumstances in order to prevent other similar events. The results of these determinations form the basis for safety action, including recommendations where necessary. As with equivalent overseas organisations, the ATSB has no power to implement its recommendations.

It is not the object of an investigation to determine blame or liability. However, it should be recognised that an investigation report must include factual material of sufficient weight to support the analysis and findings. That material will at times contain information reflecting on the performance of individuals and organisations, and how their actions may have contributed to the outcomes of the matter under investigation. 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.

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. While the Bureau issues recommendations to regulatory authorities, industry, or other agencies in order to address safety issues, its preference is for organisations to make safety enhancements during the course of an investigation. The Bureau prefers to report positive safety action in its final reports rather than making formal recommendations. Recommendations may be issued in conjunction with ATSB reports or independently. A safety issue may lead to a number of similar recommendations, each issued to a different agency.

The ATSB does not have the resources to carry out a full cost-benefit analysis of each safety recommendation. The cost of a recommendation must be balanced against its benefits to safety, and transport safety involves the whole community. Such analysis is a matter for the body to which the recommendation is addressed (for example, the relevant regulatory authority in aviation, marine or rail in consultation with the industry).

FACTUAL INFORMATION

On 29 May 2006 at about 0805 Eastern Standard Time[1], a Boeing Company 737-7Q8 aircraft (737) departed Melbourne Airport, Vic., on a scheduled flight to Brisbane, Qld. It passed within 400 ft vertically and 2.9 NM laterally of an Aero Commander 680-FL (Aero Commander) aircraft that had departed Essendon Airport, Vic., on a scheduled passenger service to Horsham, Vic. There was a breakdown of separation because the Melbourne departures controller did not comply with the requirements of the Manual of Air Traffic Services (MATS) when assigning separation responsibility to the pilot of the Aero Commander.

The 737 became airborne off runway 27 at Melbourne Airport. Melbourne Air Traffic Control issued the crew with a runway 27 DOSEL 3 standard instrument departure[2] (SID) clearance (Appendix A). The crew of the 737 complied with that airways clearance.

The Aero Commander became airborne off runway 35 at Essendon Airport. The pilot was issued with an airways clearance by the Essendon aerodrome controller (ADC), who had developed that clearance in consultation with the Melbourne ADC and the departures controller, to track overhead Melbourne Airport and climb to 3,000 ft above mean sea level (AMSL). From overhead Melbourne Airport, the Melbourne ADC instructed the pilot to fly a heading of 310 degrees magnetic. The pilot of the Aero Commander complied with that instruction.

The Melbourne ADC had the two departing 737 aircraft and the Aero Commander in sight and was applying a visual separation standard between those aircraft. The Melbourne departures controller, into whose airspace both the Aero Commander and the two 737's entered, had identified those aircraft on his air situation display and had established a radar separation standard between the aircraft before the pilot of the Aero Commander was transferred from the Melbourne aerodrome control radio frequency to the Melbourne departures radio frequency.

The pilot of the Aero Commander advised the departures controller that he had the 737 in sight. The departures controller confirmed with the pilot that he had the relevant 737 in sight, as there was another 737 that had already departed Melbourne Airport. He then instructed the pilot of the Aero Commander to maintain his own separation with the sighted 737 and cleared him to climb his aircraft to his previously requested altitude of 8,000 ft. The pilot of the Aero Commander subsequently made a request to the departures controller to maintain 6,000 ft, as he believed that was the best option to maintain separation with the 737.

The departures controller was authorised by the MATS to assign responsibility for maintaining visual separation with the 737 to the pilot of the Aero Commander in these circumstances.

---

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

2 A standard instrument departure was a published departure applicable to aircraft operating under the instrument flight rules and comprised obstacle clearance data to the minimum safe altitude and tracking data until the aircraft reached a specified point on its Air Traffic Control cleared route.

Specifically, the MATS stated that:

> Responsibility for [visual] separation shall only be assigned to a pilot…When the aircraft to be separated are operating at or below [flight level] 125 and will continue to do so during the application of this standard, the pilot of one aircraft reports sighting the other aircraft and is instructed to maintain visual separation with or to follow that aircraft.[3]

The MATS also stated that:

> In circumstances where an aircraft has been instructed to maintain separation from, but not follow, an IFR [instrument flight rules] aircraft, traffic information shall be issued to the IFR aircraft, including advice that responsibility for separation has been assigned to the other aircraft.[4]

and:

> Traffic information provided [to the IFR aircraft] shall contain as much as is necessary of the following to assist the pilot in identifying the other aircraft [including];
>
> > Position information…;
> >
> > Intentions, or direction of flight.[5]

The departures controller did not provide traffic information to the crew of the IFR 737 in accordance with the provisions specified in the MATS. Additionally, he did not advise the pilot of the Aero Commander of the intentions or direction of flight of the 737.

The departures controller reported that the normal procedure in these circumstances was to leave an over-flying aircraft at a lower altitude and on a radar heading so that an aircraft departing Melbourne Airport could climb above the over-flying aircraft. Once a vertical separation standard existed between the two aircraft, successively higher vertically-separated altitudes could then be assigned to the pilot of the over-flying aircraft. In this case that would have maintained the Aero Commander at a vertically-separated altitude below the climbing 737, until a radar separation standard existed or the Aero Commander reached its preferred cruising altitude.

The minimum horizontal distance between the two aircraft as required by the radar separation standard was 3 NM. The minimum vertical separation standard was 1,000 ft. By assigning separation responsibility to the pilot of the Aero Commander, those minima could be reduced at the discretion of the pilot of the Aero Commander while complying with Civil Aviation Regulation[6] (CAR) 163. That regulation stated that 'The pilot in command of an aircraft must not fly the

---

3 Manual of Air Traffic Services 4.5.1.4, p. 4-55, effective 9 June 2005.

4 Manual of Air Traffic Services 4.5.1.11, p. 4-56, effective 9 June 2005.

5 Manual of Air Traffic Services 4.5.1.12, p. 4-56, effective 9 June 2005.

6 Civil Aviation Regulations 1988 (Cth) Pt 12, Rules of the Air, div.1, r163.

aircraft so close to another aircraft as to create a collision hazard'. The ability of the pilot of the Aero Commander to maintain separation with the 737, and to comply with the requirements of CAR 163, was reliant on the presence of suitable weather conditions. The weather in this incident was reported as fine and clear and was not considered to be a factor in the occurrence.

The Aeronautical Information Publication[7] (AIP) stated that 'the pilot must advise ATC when he/she is unable to maintain, or has lost, sight of the other aircraft'. Neither the MATS nor the AIP provided any other advice about what minimum distance or altitude criteria might 'create a collision hazard'. The pilot of the Aero Commander later reported that he was not concerned about his ability to maintain separation with the 737 and to comply with the aircraft proximity requirements of CAR 163.

The departures controller later reported that he thought all pilots involved would have been aware of each other's location and intentions. That belief was on the basis that both crews were established on the departures controller's radio frequency at the time the departures controller assigned separation responsibility to the pilot of the Aero Commander. However, during interview, the pilot of the Aero Commander confirmed that he was not aware of the route the 737 was to fly.

7 Aeronautical Information Publication Australia ENROUTE ENR 1.4 – 5, effective 25 Nov 2004.

ANALYSIS

The assignment of the responsibility for visual separation to a pilot is a result of a joint effort between the pilot and the air traffic controller. The controller must ensure that the pilot has the information necessary to enable the pilot to comply with Civil Aviation Regulation (CAR) 163 during the application of the standard. In turn, the pilot must be able to accept responsibility for separation.

The controller's action to not advise the crew of the 737 that the pilot of the Aero Commander had been assigned separation responsibility, was not in accordance with the requirements of the Manual of Air Traffic Services (MATS). That omission was the basis for the infringement of the separation standard. In addition, the pilot of the Aero Commander was not provided with information on 'Intentions or direction of flight' of the 737 in accordance with the MATS.

Despite that lack of information, the pilot of the Aero Commander understood that he was responsible for maintaining separation with the 737 and was operating his aircraft accordingly. The pilot complied with CAR 163 and did not believe that the safety of either aircraft was compromised during the occurrence.

Controllers must comply with the requirements of the MATS when assigning separation responsibility to a pilot. Also, the provision of timely and accurate information by the controller may assist a pilot to maintain situational awareness in order to effectively achieve and maintain separation, and to comply with the aircraft proximity requirements of CAR 163.

APPENDIX A

Appendix A: Departures and Approach chart showing the runway 27 DOSEL 3 standard instrument departure (SID)