



**Australian Government**

**Australian Transport Safety Bureau**

# Loss of separation assurance between an Airbus A320, VH-VNQ and a Boeing 737, VH-VZB

50 km SSE of Hay Airport, New South Wales, 30 August 2013

**ATSB Transport Safety Report**  
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#### **Addendum**

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# Loss of separation assurance between an Airbus A320, VH-VNQ and Boeing 737, VH-VZB

## What happened

On 30 August 2013, a loss of separation assurance (LOSA)<sup>1</sup> occurred between an Airbus A320, registered VH-VNQ (VNQ), and a Boeing 737, registered VH-VZB (VZB), 50 km south-south-east of Hay Airport, New South Wales. VNQ was conducting a passenger flight from Melbourne, Victoria to Cairns Queensland under the instrument flight rules (IFR).<sup>2</sup> VZB was also conducting an IFR passenger flight in the opposite direction, from Cairns to Melbourne.

Airspace map



Source: Airservices Australia

Both aircraft were operating in Class A airspace,<sup>3</sup> under the control of an Airservices Australia (Airservices) air traffic controller (Controller 1). The required separation standard in the portion of Class A airspace covered by radar surveillance was 5 NM laterally or 1,000 ft vertically. The majority of air routes in the airspace over which Controller 1 had jurisdiction were one-way routes – aircraft could only operate in the direction marked on the aeronautical charts (Figure 1). The Melbourne to Cairns route was a two-way route designated T139 (Figure 2). The airspace also contained a number of east/west routes that crossed T139, as well as a number of north-west/south-east routes. As well as separating aircraft under their jurisdiction, Controller 1 was also responsible for sequencing aircraft arriving through their airspace for arrival into Melbourne.

Flight crews were required to plan flights in accordance with levels based on the magnetic heading of the planned track: flights on magnetic tracks from 000° through east to 179° must plan odd cruising levels; those on magnetic tracks from 180° through west to 359° must plan even cruising levels. Within controlled airspace, air traffic control (ATC) may assign and pilots may request a level that does not conform to this requirement when traffic or other operational circumstances require.

The crew of VNQ had planned to operate at flight level (FL) 360,<sup>4</sup> and the crew of VZB had planned to operate at FL360 to a position inland and abeam Emerald, Queensland, and then at FL370 to Melbourne. However, the change of level planned by VZB had not been initiated by the flight crew or the need to continue at FL360 questioned by either Brisbane or Melbourne ATC, resulting in both aircraft converging at the same flight level.

At about 1620 Eastern Standard Time,<sup>5</sup> Controller 1 reported that their focus was on monitoring VNQ's climb through the levels of a number of aircraft on crossing air routes and only became

<sup>1</sup> A separation standard existed; however, planned separation was not provided or separation was inappropriately or inadequately planned.

<sup>2</sup> Instrument flight rules permit an aircraft to operate in instrument meteorological conditions (IMC), which have much lower weather minimums than visual flight rules. 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.

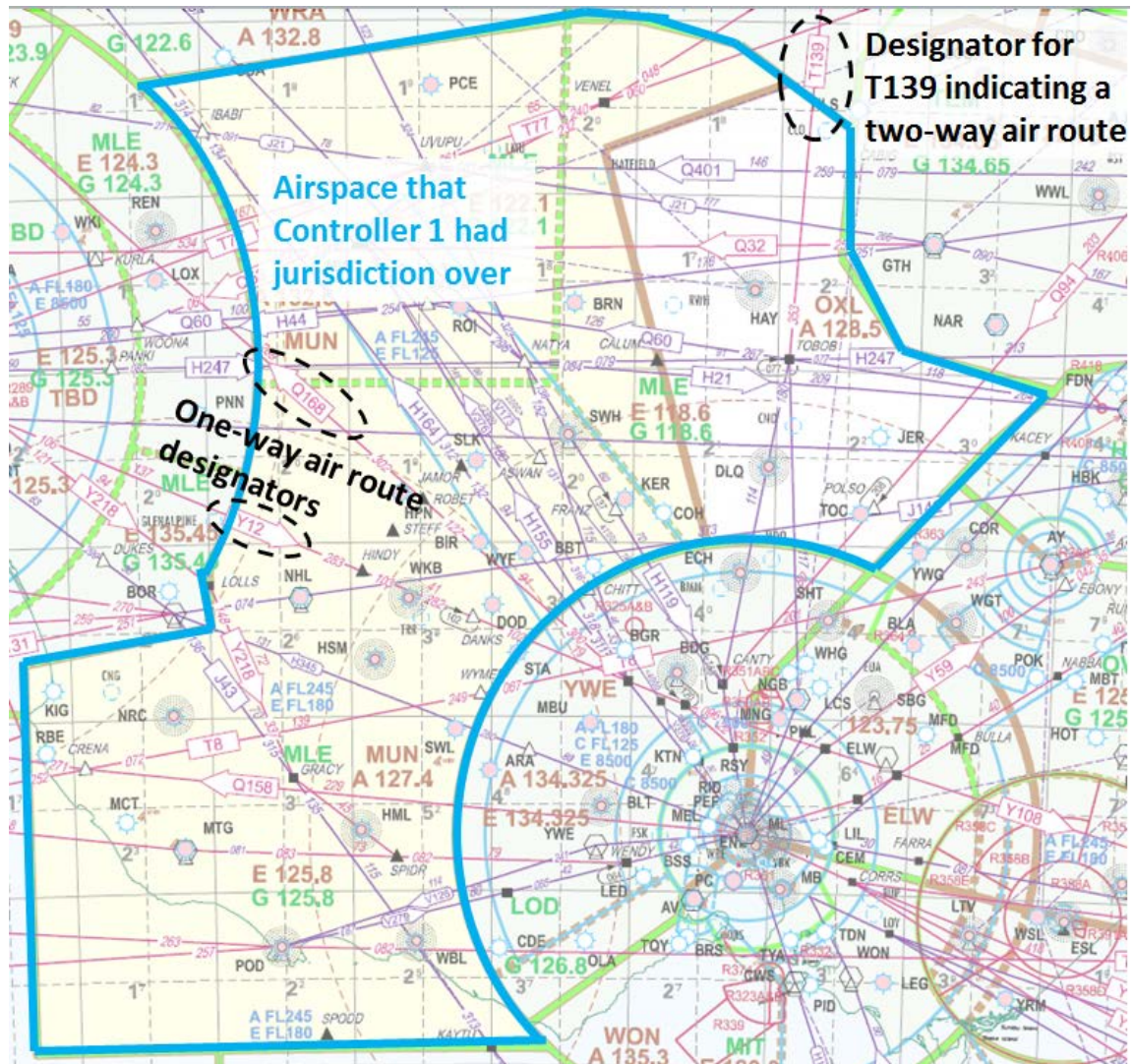
<sup>3</sup> Class A: Instrument flight rules (IFR) flights only are permitted. All flights are provided with an air traffic control service and are positively separated from each other.

<sup>4</sup> At altitudes above 10,000 ft in Australia, an aircraft's height above mean sea level is referred to as a flight level (FL). FL360 equates to 36,000 ft.

<sup>5</sup> Eastern Standard Time (EST) was Coordinated Universal Time (UTC) + 10 hours.

aware of the aircraft converging at the same level when, at 1624, the Short Term Conflict Alert (STCA) activated and radar separation was about 18 NM (33 Km). Controller 1 immediately issued a safety alert,<sup>6</sup> and issued instructions to the crew of VNQ to turn right and provided traffic information<sup>7</sup> on VZB, which was now 14 NM (25 Km) away in their 12 o'clock position.<sup>8</sup> Controller 1 then issued a safety alert and issued instructions to the crew of VZB to also turn right. Controller 1 subsequently issued instructions to the crew of VZB to descend to FL350 and provided traffic information on VNQ which was now at 6.3 NM in their 9 o'clock position. Radar separation reduced to 5.9 NM and 900 ft at 1625 as the aircraft passed abeam each other. While there was a loss of separation assurance, radar separation was not infringed.

**Figure 1: Airspace that Controller 1 had jurisdiction over**



Source: Airservices Australia

<sup>6</sup> Safety alert – the provision of advice to an aircraft when ATC becomes aware that an aircraft is in a position which is considered to place it in unsafe proximity to terrain, obstructions or another aircraft.

<sup>7</sup> Traffic information – information issued by ATC to alert a pilot to other known or observed traffic which may be in proximity to the pilot's position or intended route and to help the pilot avoid collision.

<sup>8</sup> 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.

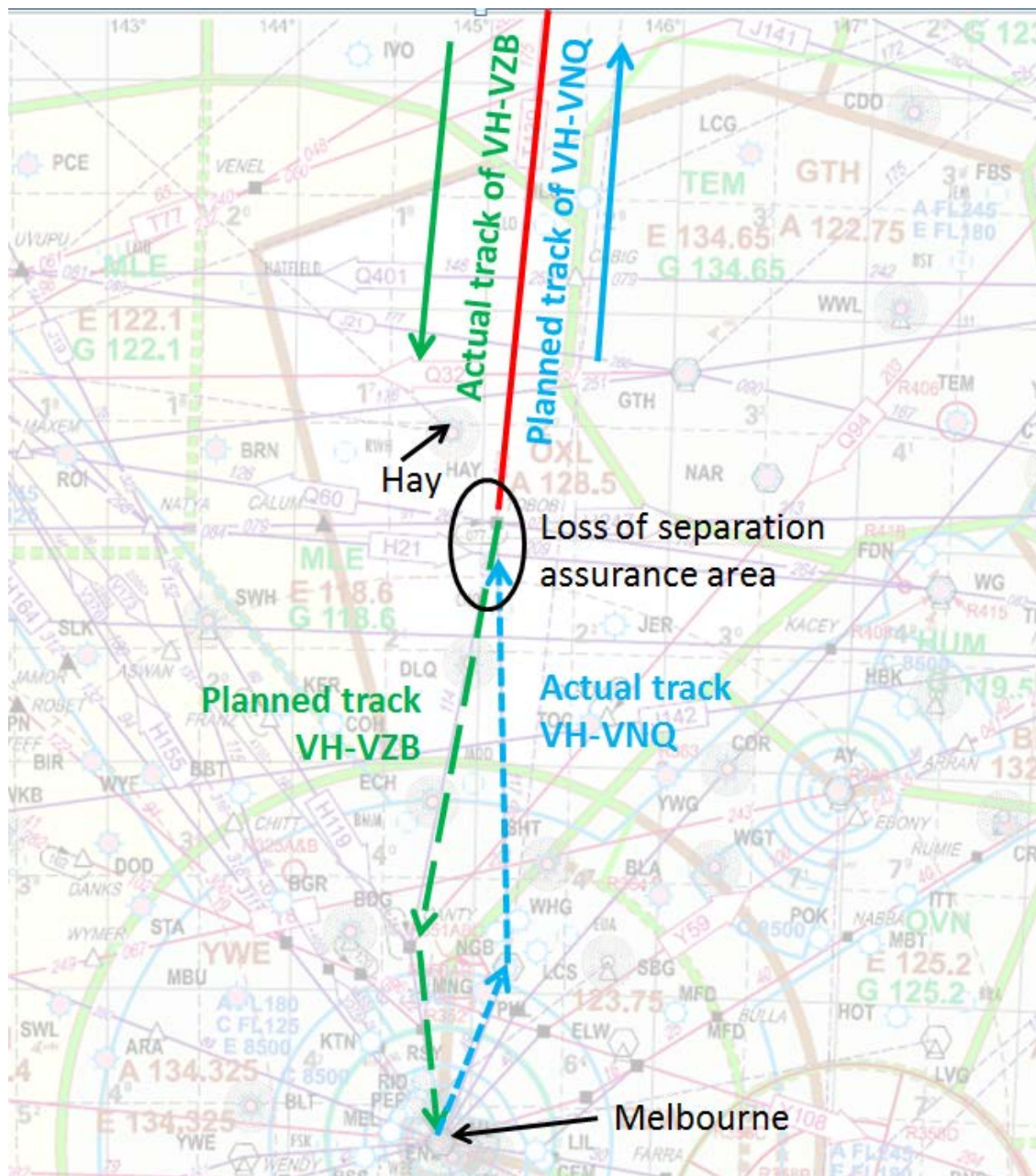


## Airservices Australia investigation report

The Airservices investigation into the LOSA found that Controller 1 correctly utilised compromised separation techniques by issuing safety alerts, turning the aircraft away from each other, descending VZB and passing traffic information. The report also found that an adjustment to the STCA warning distance parameter eight months prior to the incident provided an additional five seconds alert time. The additional time may have assisted Controller 1 to initiate recovery action prior to the separation standard being infringed.

The report noted that the Melbourne to Cairns route structure had not undergone a review following an increase in traffic. Further, the report noted that the Manual of Air Traffic Services (MATS) stated that ATC may assign non-conforming cruising levels only when traffic or other operational circumstances require and to return aircraft to conforming levels when traffic and workload allows.

**Figure 2: Airspace map overlaid with aircraft tracks and the LOSA area**



Source: Airservices Australia

## Safety action

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.

### **Airservices Australia**

As a result of this occurrence, Airservices has advised the ATSB that they will review the Melbourne to Cairns air route with regard to creating one-way routes, and more generally review similar routes and risk review mechanisms in place nationally. In addition, Airservices has issued a Standardisation Directive reminding air traffic controllers of their responsibilities regarding the application of non-standard levels and subsequent return to standard levels.

## Safety message

The Australian Transport Safety Bureau (ATSB) research report AR-2012-032 titled *Loss of separation between aircraft in Australian airspace January 2008 to June 2012* noted that the basic philosophy driving the design of complex systems, including ATC, is defences in depth. The report identified layers of defence including airspace design, separation standards, the STCA and monitoring and detection by the controllers. A copy of the ATSB research report AR-2012-032 – *Loss of separation between aircraft in Australian airspace January 2008 to June 2012* is available at [www.atsb.gov.au/publications/investigation\\_reports/2012/aair/ar-2012-034.aspx](http://www.atsb.gov.au/publications/investigation_reports/2012/aair/ar-2012-034.aspx).

In this LOSA incident, the timely activation of the STCA and the controller correctly utilising compromised separation techniques ensured that the separation standards were not infringed.

## General details

### **Occurrence details**

Date and time:	30 August 2013 – 1624 EST	
Occurrence category:	Serious incident	
Primary occurrence type:	Loss of separation assurance	
Location:	50 km SSE of Hay Airport, New South Wales	
	Latitude: 34° 57.37' S	Longitude: 145° 00.75' E

### **Aircraft details: VH-VNQ**

Manufacturer and model:	Airbus Industrie A320-232	
Registration:	VH-VNQ	
Serial number:	5218	
Type of operation:	Air transport - high capacity	
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

### **Aircraft details: VH-VZB**

Manufacturer and model:	Boeing Company 737-838	
Registration:	VH-VZB	
Serial number:	34196	
Type of operation:	Air transport - high capacity	
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

## About the ATSB

The Australian Transport Safety Bureau (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; 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.