Australian Government
Australian Transport Safety Bureau

Call sign confusion involving Airbus A330, VH-EBA, and Boeing 737, VH-VXF

near Brisbane Airport, Queensland, 15 December 2016

ATSB Transport Safety Report
Aviation Occurrence Investigation
AO-2016-173
Final – 27 April 2017

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Publishing information

Published by: Australian Transport Safety Bureau
Postal address: PO Box 967, Civic Square ACT 2608
Office: 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
Telephone: 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6247 3117, from overseas +61 2 6247 3117
Email: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

Addendum

Page	Change	Date

Call sign confusion involving Airbus A330, VH-EBA, and Boeing 737, VH-VXF

What happened

On 15 December 2016, an Airbus A330-202 aircraft, registered VH-EBA and operating Qantas Flight (QF) 652, was on descent to Brisbane Airport, Queensland, arriving from the south-west from Perth, Western Australia. QF652 was sequenced to follow another Qantas Airbus A330-303 aircraft, registered VH-QPG and operating QF62, which was also on descent to Brisbane Airport, but arriving from the north-west from Narita, Japan.

For noise abatement, reciprocal runway operations were in progress at Brisbane, with arriving aircraft landing on runway 19, and departing aircraft taking off from runway 01.

At 0516:25 Eastern Standard Time (EST), the approach controller cleared QF62 to descend to 5,000 ft.

At 0517:55, a Qantas Boeing 737-838 aircraft, registered VH-VXF and operating QF601, (departing Brisbane for Melbourne, Victoria) took off from runway 01 and was tracking to the south-west. At 0519:15, the approach controller cleared QF601 to climb to 8,000 ft.

Five seconds later, the approach controller cleared QF652 to descend to 9,000 ft for separation with QF601 travelling in the opposite direction. The controller advised the crew of QF652 that they would be cleared for further descent once they had passed opposite direction traffic. The controller then also advised the flight crew of QF601 that there would be a short delay at 8,000 ft due to opposite direction traffic above.

At 0520:20, the controller inadvertently cleared QF652 (instead of QF62) to descend to 2,500 ft and conduct an ILS approach to runway 19. The crew of QF652, still on descent to 9,000 ft, read back the clearance and set their assigned altitude to 2,500 ft (which was normal procedure having been cleared for the descent). The crew sighted the opposite direction aircraft out to their right, and continued their descent.

About 30 seconds later, the air traffic system identified a discrepancy between the controller-cleared flight level of 9,000 ft and the flight crew-entered altitude of 2,500 ft. The controller received a predicted level mismatch (PLM) alert, which displays as 'cleared flight level (CFL?)'.[1] The controller asked the crew of QF652 to confirm they were maintaining 9,000 ft, and the crew responded that they were on descent to 2,500 ft as cleared. The aircraft was passing 9,200 ft at this stage. The controller immediately responded 'no, that was for Qantas 62, Qantas 652 maintain 9,000'. By that time, radar data indicated that QF62 was at 4,900 ft. No read back was heard from the crew of QF62 to the clearance inadvertently issued to QF652.

The flight crew of QF652 reported that they were passing about 8,600 ft, when the controller instructed them to maintain 9,000. The crew stopped the descent and climbed the aircraft back up to 9,000 ft. The crew received a traffic alert[2] for about 5 seconds on the reciprocal aircraft. At 0521:19, the controller cleared the flight crew of QF652 to descend to 8,000 ft and the aircraft subsequently conducted a normal approach to Brisbane.

---

1 The PLM alert will display when there is a system-detected difference between the controller-entered CFL and the altitude/level entered by the pilot into the aircraft's control systems (from suitably equipped aircraft – with mode S transponder).

2 Traffic advisory (TA): an alert issued by the traffic alert and collision avoidance system (TCAS) when the detected traffic may result in a conflict. Pilots are expected to initiate a visual search for the traffic causing the TA.

Figure 1: Traffic disposition and PLM alert

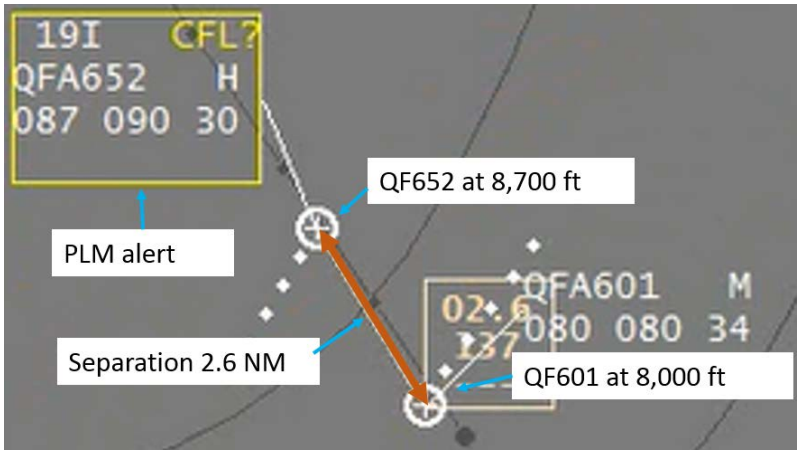
Source: Airservices Australia – annotated by ATSB

Safety analysis

Separation

As the two aircraft passed each other, radar data showed QF652 at an altitude of 9,000 ft and QF601 at 8,000 ft, with 2.3 NM lateral separation (Figure 1). Figure 2 shows QF652 at 8,700 ft and lateral separation with QF601 of 2.6 NM (Figure 2). The incorrect descent clearance resulted in a loss of separation with QF601, where the separation required was 3 NM or 1,000 ft and the minimum separation recorded was 2.5 NM and 700 ft.

Figure 2: Loss of separation



Source: Airservices Australia – annotated by ATSB

Controller comments

The approach controller had been in the position since 0200 and reported feeling alert, well rested and that things were going very well in the minutes prior to the incident in adhering to noise abatement requirements and keeping the traffic moving. The controller commented that between

0500 and 0600 they get busy; departures tend to conflict with arrivals and traffic can be quite complex at times. The controller assessed that their workload at the time was moderate.

The controller commented that when they identify similar call signs, there are techniques they employ such as appending 'heavy', or the aircraft's position in the sequence, to the call sign, but did not do that in this instance. Both inbound aircraft were 'heavy' so it would not have helped to resolve the possible confusion.

After giving the clearance (inadvertently) to QF652 that was meant for QF62, both aircraft appeared to descend.[3] When the flight crew read back 'Qantas six fifty two', the controller did not identify the mismatch of the data in the aircraft label with the response, possibly because it was the expected response to the clearance instruction.

Flight number call signs

According to the Australian Aeronautical Information Publication (AIP) General 3.4 paragraph 4.17, rules for aircraft call signs include that flight numbers should 'take into account flight numbers already in use by the operator and other agencies in the intended control environment, operational area or nearby'.

Call sign confusion

The Manual of Air Traffic Services (MATS) *6.2.1.1 Callsign confusion* stated:

> When similar callsigns may cause confusion you may take action to minimise errors including:
>
> a) emphasising certain numbers/letters;
>
> b) repeating the entire callsign e.g. QANTAS451 QANTAS451;
>
> c) repeating the prefix e.g. QANTAS451 QANTAS;
>
> d) advising pilots that there are aircraft with similar callsigns on frequency; or
>
> e) instructing pilots to use a different callsign either temporarily or for the duration of the flight.

Airservices Australia initiative

After a number of REPCON (confidential reports) related to flight number call sign confusion in the Brisbane area, Airservices Australia (Airservices) established a process to monitor and increase awareness of reported call sign confusion issues. The process involves reviewing the call sign confusion occurrences reported through their internal reporting system and notifying relevant airlines of the reported occurrence. In addition, Airservices provides a 'call-sign conflict report' to domestic aircraft operators each month.

Airservices advised that the distribution of the monthly call sign confusion reports to domestic operators was paused in 2016. This was to allow for an upgrade to an improved information system as the basis of the report. However, given a new system has yet to be commissioned Airservices has reinstated use of the previous system, and will continue to distribute monthly call sign confusion reports while working on improvements to the advice provided to industry.

Airservices also commented that a number of current mitigation measures currently exist for pilots and controllers to respond to call sign confusion, including documented AIP and MATS procedures to minimise the likelihood of call sign confusion. Additionally, Australia utilises 'group format' as the preferred means of transmitting call sign/flight number within Australian airspace in an effort to reduce the possible confusion with assigned flight levels or headings.

---

[3] While QF62 maintained 5,000 ft, the altitude readout observed by the controller indicated 4,900 ft. The controller interpreted the 4,900 ft displayed as the aircraft descending.

Findings

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

- The controller inadvertently assigned descent to QF652 instead of QF62 due to call sign confusion, resulting in a loss of separation with QF601.
- The two inbound aircraft were operating on the same frequency with similar call signs and call sign confusion mitigation strategies were not used by air traffic control.

ATSB comment

According to the article *Callsign Confusion*, the US Aviation Safety Reporting System (ASRS) receives a large number of reports of call sign confusion, some of which result in losses of separation. The article states that communications technique is pilots' and air traffic controllers' primary defence against confusion and that they need to continue to bring call sign problems to the attention of management.

The Skybrary article *Call-sign confusion* lists contributory factors including:

- failure of operator to give sufficient consideration in allocation of call signs
- pilot and controller workload
- interruption or distraction
- airspace and procedure design
- traffic density.

Safety message

Air traffic control and flight crew need to be vigilant when they identify the potential for call sign confusion.

Flight numbers are assigned by airlines, some of which operate call sign de-confliction programmes. The ATSB encourages aircraft operators to use these strategies to help prevent similar incidents occurring. Air traffic control is encouraged to consider liaising with airlines to enhance call sign de-confliction programmes.

General details

Occurrence details

Date and time:	15 December 2016 – 0517 EST	
Occurrence category:	Incident	
Primary occurrence type:	Loss of separation	
Location:	near Brisbane Airport, Queensland	
	Latitude: 27° 23.05' S	Longitude: 153° 07.05' E

Aircraft details: VH-EBA

Manufacturer and model:	Airbus A330	
Registration:	VH-EBA	
Operator:	Qantas Airways	
Serial number:	0508	
Type of operation:	Air transport high capacity – Passenger	
Persons on board:	Crew – Unknown	Passengers – Unknown
Injuries:	Crew – 0	Passengers – 0
Aircraft damage:	Nil	

Aircraft details: VH-VXF

Manufacturer and model:	The Boeing Company 737	
Registration:	VH-VXF	
Operator:	Qantas Airways	
Serial number:	29553	
Type of operation:	Air transport high capacity – Passenger	
Persons on board:	Crew – Unknown	Passengers – Unknown
Injuries:	Crew – 0	Injuries – 0
Aircraft 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 operations involving the travelling public.

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.