



**Australian Government**

**Australian Transport Safety Bureau**

# Turbulence event involving a Boeing 777, VH-VPE

472 km NW of Noumea La Tontouta International Airport, New Caledonia,  
23 September 2013

**ATSB Transport Safety Report**  
Aviation Occurrence Investigation  
AO-2013-181  
Final – 27 March 2014

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

#### **Publishing information**

**Published by:** Australian Transport Safety Bureau  
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#### **Addendum**

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# Turbulence event involving a Boeing 777, VH-VPE

## What happened

On 23 September 2013, the crew of a Boeing 777 aircraft, registered VH-VPE (VPE) and operated by Virgin Australia, conducted a scheduled passenger flight from Brisbane, Australia to Los Angeles, United States. At about 0305 Coordinated Universal Time (UTC) in the cruise at flight level (FL)<sup>1</sup> 310 and flying in clear air the aircraft encountered abrupt severe turbulence.<sup>2</sup> The flight crew turned on the seat belt sign, reduced the speed of the aircraft and requested from air traffic control a descent to a block altitude from FL310 to FL 290.

### In-flight turbulence



Source: ATSB

At the same time, the cabin crew had begun the meal service and the seat belt signs were turned off. Cabin crew members reported being thrown around the cabin by the turbulence with two crew hitting their heads on the aircraft cabin ceiling. Other injuries reported by the cabin crew included sore backs, a sore toe, a sore ankle and bumped heads. Food and catering equipment were spread over seats, passengers and the aisles with the rear section of the aircraft affected the most. All passengers were seated at the time with their seat belts on. One passenger reported a sore neck and another passenger reported a burn injury as a result of a spilt hot meal. There were no reported injuries to the four flight crew.

It is reported that the aircraft did not exceed any of the normal flight parameters. Over the next 90 minutes, there was light to moderate turbulence and during this time the cabin crew and passengers remained seated.

## Operator investigation

The operator determined that the data from the quick access recorder showed that, during the incident, a positive vertical acceleration value of 1.42g was recorded, and then a negative vertical acceleration of 0.4g was recorded. The negative vertical acceleration experienced by the aircraft resulted in the cabin crew and unsecured objects being thrown into the air.

The operator indicated that the flight crew made a passenger announcement prior to take-off that even when the fasten seat belt sign is turned off there is always a chance of unexpected turbulence and passengers should keep their seat belts fastened whenever they are in their seats.

The flight crew reported that the flight had been smooth up until the aircraft encountered the turbulence.

The operator reviewed the Significant Meteorological Information that was available within the Flight plan package for forecast severe turbulence, however it was determined that the forecast areas of severe turbulence was not in the vicinity of the flight planned track.

<sup>1</sup> At altitudes above 10,000 ft, an aircraft's height above mean sea level is referred to as a flight level (FL). FL 310 equates to 31,000 ft.

<sup>2</sup> Severe turbulence is characterised by large, abrupt changes in altitude/attitude, with large variations in indicated airspeed.

## 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.

### **Virgin Australia**

As a result of this occurrence, Virgin Australia has advised the ATSB that they are taking the following safety actions:

- Flight Dispatch has updated their policy regarding severe weather and turbulence avoidance.
- A risk assessment and analysis of the event has been completed and action plans are being developed as a result of this incident.
- A Turbulence Management Working Group has been established.

## Safety message

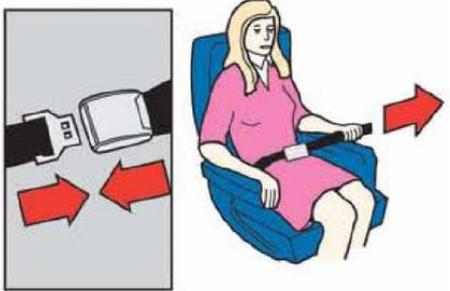
Turbulence by its nature is unpredictable, occurring without warning and ranging from a few minor bumps to severe jolts.

The ATSB aviation safety bulletin AR-2008-034 *Staying Safe against In-flight Turbulence* reported that, for the five-year period 2009 to 2013, there were 677 turbulence occurrences on flights in, to or from Australia that were reported to the ATSB, with 197 minor injuries and 2 serious injuries to passengers and cabin crew.

**Staying Safe against In-flight Turbulence**

What can you do to stay safe?

- Put your seatbelt on, and keep it fastened when you are seated.
- Pay attention to the safety demonstration and any instructions given by the cabin crew.
- Read the safety information card in your seat pocket.



In a typical turbulence incident, 99 per cent of people on board receive no injuries. However, the turbulence can cause passengers and cabin crew who are not wearing their seat belts to be thrown around without warning.

In this event, all passengers were seated with their seat belts fastened, even though the seat belt sign had been switched off. Cabin crew are at greater risk of injury during turbulence encounters as they are moving around the cabin and not seated with a seat belt fastened. This incident highlights the benefits of keeping your seatbelt fastened during the flight.

The following publications provide additional information:

- *Staying Safe against In-flight Turbulence*, <http://www.atsb.gov.au/publications/2014/in-flight-turbulence.aspx>.
- *Cabin Crew Safety 2001, January-February 2001*, [www.flightsafety.org/archives-and-resources/publications/cabin-crew-safety/cabin-crew-safety-2001](http://www.flightsafety.org/archives-and-resources/publications/cabin-crew-safety/cabin-crew-safety-2001).
- Roller Coaster Ride, how to minimise the risks of injury from in flight turbulence, in *Flight Safety Australia May-June 2006*, [www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC\\_91364](http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC_91364).

## General details

### ***Occurrence details***

Date and time:	23 September 2013 – 0305 UTC	
Occurrence category:	Incident	
Primary occurrence type:	Turbulence event	
Location:	472 km NW of Noumea La Tontouta International Airport, New Caledonia	
	Latitude: 18° 47.92' S	Longitude: 163° 14.33' E

### ***Aircraft details***

Manufacturer and model:	The Boeing Company 777-3ZGER	
Registration:	VH-VPE	
Operator:	Virgin Australia	
Serial number:	37939	
Type of operation:	Air transport - high capacity	
Persons on board:	Crew – 16	Passengers – 354
Injuries:	Crew – 6	Passengers – 2
Damage:	None	

## 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.