Australian Government
Australian Transport Safety Bureau

Flight path management occurrence involving B737, VH-YID

55 km from Adelaide Airport, South Australia | 9 May 2015

Investigation

ATSB Transport Safety Report
Aviation Occurrence Investigation
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Addendum

Page	Change	Date

Safety summary

What happened

On the evening of 9 May 2015, a Boeing B737-8FE aircraft, registered VH-YID and operated by Virgin Australia Airlines Pty. Ltd. (Virgin), was on a scheduled passenger service from Sydney, New South Wales to Adelaide, South Australia. During a high-speed descent, the crew responded to aircraft indications that they were approaching airspeeds greater than desired by extending the speed brakes. While the speed brakes were still extended, the airspeed continued to increase towards the aircraft's maximum speed, the result of which would have been an overspeed. In an effort to prevent an overspeed, the first officer overrode the autopilot by pulling back on the control column until the autopilot entered a secondary mode known as control wheel steering-pitch mode. This was followed immediately by an abrupt release of the control column, after which one cabin crew member sustained a minor injury.

What the ATSB found

The ATSB found that the crew selected a descent speed of 320 kt, which they routinely used for air traffic control-initiated high-speed descents. However, the increased risk of an overspeed in changing wind conditions had not been adequately considered by the crew.

The ATSB also found that, whereas Virgin's training included a focus on the management of overspeeds, the crew had not yet completed this training. This increased the risk that the guidance provided through other sources would not be followed correctly.

Additionally, the flight crew had initiated the cabin preparation for landing earlier than usual due to the expectation of turbulence later in the descent. This likely reduced the risk of more serious injury to the cabin crew as they were in the final stages of securing the cabin than had they commenced preparations for landing at the normal time.

What's been done as a result

Prior to this occurrence, Virgin had implemented improved crew training and guidance on managing overspeeds. This included the addition of a cyclic simulator training session that focused on overspeed management on descent.

Safety message

This occurrence highlights the increased risk of overspeed when conducting high-speed descents in conditions of varying winds and any associated turbulence. Identifying and discussing the risks associated with high-speed descent increases the likelihood that crew will select a lower descent speed and/or consider the best way to deal with an impending aircraft overspeed before the descent is initiated.

The Occurrence

On the evening of 9 May 2015, a Boeing B737-8FE aircraft, registered VH-YID and operated by Virgin Australia Airlines Pty. Ltd. (Virgin) as 'Velocity 436', was on a scheduled passenger service from Sydney, New South Wales to Adelaide, South Australia. The first officer (FO) was the pilot flying.[1]

At about 1915 Central Standard Time[2], the flight crew conducted an approach briefing in preparation for the descent. The crew discussed the 'fairly strong' westerly wind forecast in the area that would affect their descent, and decided they would instruct the cabin crew to prepare the cabin for landing at about flight level (FL) 270[3]. This was reported slightly earlier than usual and was intended to reduce the risk of turbulence-related injuries. Soon after, air traffic control (ATC) requested the crew to conduct a high-speed descent into Adelaide, which the crew accepted. The FO changed the planned descent speed from 280 kt to 320 kt, which was reported by the crew to be routinely used during ATC-initiated high-speed descents.

The descent was commenced about 4 minutes later and, passing about FL 270, the captain made the public address 'cabin crew prepare for landing'. This was the cue for the cabin crew to commence the cabin preparation procedure by securing all loose cabin equipment, ensuring passengers were in their seats with seatbelts fastened and then securing themselves in their jump seats. Seven minutes later the flight crew switched the seatbelt signs on, as a cue to the cabin crew to finalise this procedure and take their seats.

During the descent the FO controlled the aircraft's vertical profile using various autopilot descent modes. Passing through FL 250, the FO selected the VNAV PATH mode (see the section titled *VNAV PATH descent mode)*.

As the aircraft passed through 10,000 ft, the airspeed started to increase above 320 kt and at 8,400 ft the message 'drag required' displayed on the flight management computer (FMC) scratchpad as per system design. In response, the FO extended the speed brake, making an effort to do so slowly and smoothly. The captain observed this action, initially concerned that the FO may extend the speed brake too quickly. However, the captain was satisfied that the speed brake was appropriately extended and that the increasing airspeed trend was being managed. The captain's attention was then turned to other tasks. Over the next 6 seconds the airspeed continued to increase, and the FO recalled seeing the speed trend vector on the primary flight display (PFD) extend beyond the aircraft's maximum certified speed (V_{MO}).[4]

In an effort to avoid an overspeed, the FO pulled back forcibly on the control column in order to raise the nose, overriding the autopilot and activating the control wheel steering – pitch (CWS-P). This technique was routinely used to manage overspeeds on descent. On this occasion the FO reported feeling greater than usual resistance when raising the nose due to the already low pitch angle. The FO then recalled feeling a 'pinch' as the autopilot reverted to CWS-P, along with a sudden pitch change and a high g loading[5] on the aircraft. In response, the FO abruptly released the back pressure on the control column, rapidly unloading the g loading. At that moment, the cabin crew had almost completed securing the cabin and were about to take their seats. They reported experiencing what they thought to be turbulence, and two cabin crew in the rear galley

1 Pilot Flying (PF) and Pilot Monitoring (PM) are procedurally assigned roles with specifically assigned duties at specific stages of a flight. The PF does most of the flying, except in defined circumstances; such as planning for descent, approach and landing. The PM carries out support duties and monitors the PF's actions and aircraft flight path.

2 Central Standard Time was Coordinated Universal Time (UTC) + 9.5 hours.

3 At altitudes above 10,000 ft in Australia, an aircraft's height above mean sea level is referred to as a flight level (FL). FL 270 equates to 27,000 ft.

4 The speed trend vector indicates where the airspeed is predicted to be in 10 seconds from where it is observed if there is no other intervention.

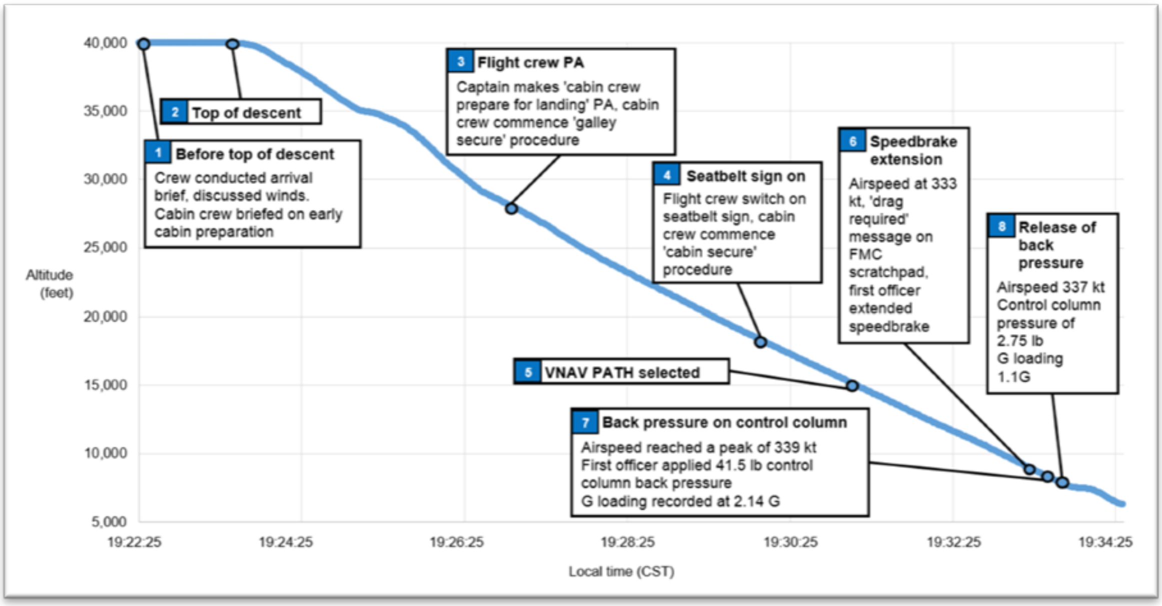
5 G Load is the nominal value for acceleration. In flight, g load values represent the combined effects of flight manoeuvring loads and turbulence. This can be a positive or negative value.

lost their footing. This resulted in one of the cabin crew impacting the galley floor heavily, sustaining an injury to their knee.

The FO stowed the speed brake, selected the LVL CHG (level change) descent mode and reduced the selected speed to 250 kt. The captain checked the status of the cabin crew and was informed of the injury to the crew member.

The sequence of events during the descent is highlighted in Figure 1.

Figure 1: Sequence of events on descent, including the flight and cabin crew actions plotted against altitude and time



Source: ATSB

Personnel information

The flight crew signed on for duty in Sydney at 0900 Eastern Standard Time[6] and had been on duty for 11 hours at the time of the occurrence.

The captain held an Air Transport Pilot (Aeroplane) Licence and had a total flying experience of 13,500 hours, of which about 8,750 were on the B737 aircraft. The captain commenced flying with Virgin in 2003 and held a valid Class 1 Aviation Medical Certificate.

The FO held an Air Transport Pilot (Aeroplane) Licence and had a total flying experience of about 7,500 hours, of which about 5,000 were on the B737 aircraft. The FO commenced flying with Virgin in 2007 and held a valid Class 1 Aviation Medical Certificate. Although the FO reported feeling tired at the time of the occurrence, there was no additional evidence to indicate a level of fatigue known to affect performance beyond what would reasonably be experienced at the end of the day.

Aircraft information

VNAV PATH descent mode

VNAV PATH is an automated descent mode primarily designed to keep the aircraft on a predetermined descent path using aircraft pitch. During descents in this mode, airspeed is controlled using thrust or displaying messages to the flight crew to increase drag as required. The VNAV PATH mode allows for minor airspeed excursions while prioritising keeping the aircraft on path. If airspeed increases to 10 kt above the selected speed, the message ‘drag required’

6 Eastern Standard Time (EST) was Coordinated Universal Time (UTC) + 10 hours.

appears on the FMC scratchpad. In response, crew extend the speed brake to arrest further speed increases.

Control wheel steering – pitch (CWS-P)

Pushing a CWS engage switch on the mode control panel engages the autopilot (A/P) pitch and roll axes in the CWS mode. At the time of the occurrence, CWS-P could also be engaged by applying 40 lb back pressure to the control column to manually override the A/P. By doing so, a desired pitch attitude could be set. The ability to manually engage CWS-P and override the A/P was later removed from the flight control computer's software to avoid inadvertent and undetected reversion from a descent mode to CWS-P. With CWS-P engaged, the A/P manoeuvres the aircraft in response to control pressures applied by either pilot. The control pressure is similar to that required for manual flight. When control pressure is released, the A/P holds the existing attitude.

While the FO's routine use of CWS-P as a means to manage overspeeds was not part of Virgin training, it was reported used by the FO and other pilots. This was because it was an effective way to handle an overspeed on descent without disconnecting the A/P, particularly when changing weather conditions meant that an overspeed could occur with little time for the crew to react.

Maximum operating indicated airspeed

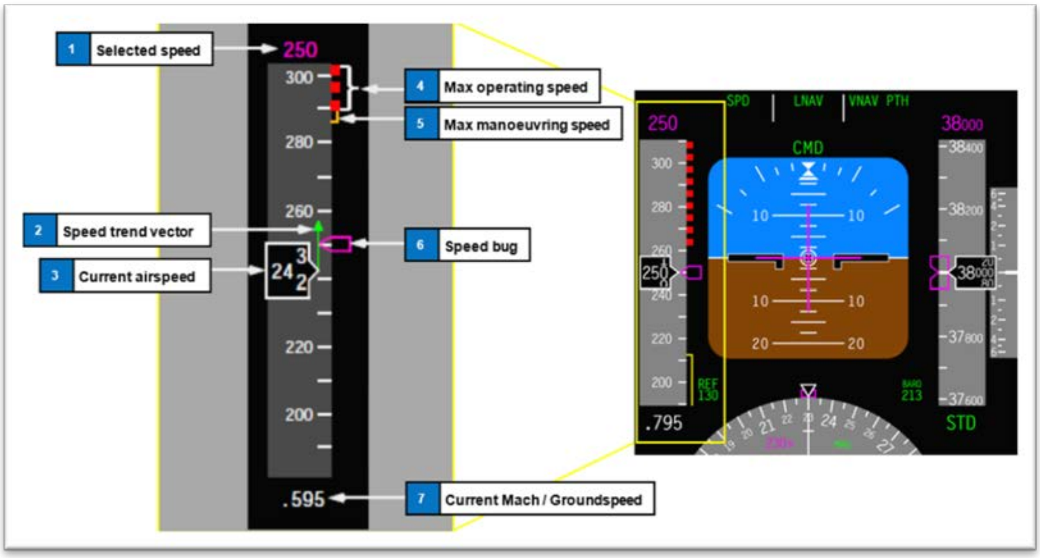
The maximum operating indicated airspeed (V_{MO}) represents the maximum certified limiting speed of the aircraft. V_{MO} for the B737-8FE is 340 kt. An overspeed warning sounds if the aircraft exceeds V_{MO}.

Airspeed trend vector on the primary flight display

The primary flight display (PFD) presents a dynamic colour display of the parameters necessary for flight path control. This includes (Figure 2):

- the manually-selected airspeed
- a green speed trend vector, which indicates predicted airspeed in 10 seconds time
- the V_{MO}.

Figure 2: B737 PFD, showing the manually-selected airspeed (number 1), the green speed trend vector (number 2) and V_{MO} (number 4). Note V_{MO} gradually reduces below 340 kt with increasing altitude above approximately FL 250. In this graphic, the representation shows the aircraft at FL 380 (38,000 ft), explaining the reduced V_{MO}



Source: B737 Flight Crew Operations Manual and Wikipedia, modified by the ATSB

Effect of g loading

G loading refers to the aircraft occupant experiencing an *apparent* acceleration equal to the load factor times the acceleration due to gravity. For example, when the pilot performs a pull up with a load factor of two, loose objects fall to the floor at twice the normal acceleration of gravity. A g loading less than one results in feelings of reduced weight and, eventually, loose objects floating upwards once the g loading reduces below zero.

Meteorological information

The forecast meteorological information that was available to the crew included:

- an Aerodrome Forecast for arrival into Adelaide that predicted a light south-westerly wind and showers of rain with intermittent periods of less than 30 minutes of south-westerly winds at 20 kt, gusting up to 30 kt
- no SIGMETs[7] that were relevant to this flight
- winds from 264 °M at 54 kt at FL 350, from 250 °M at 38 kt at FL 250, from 258°M at 40 kt at FL 150 and from 270° at 41 kt at 5,000ft.

Recorded data

The flight data was examined to derive the aircraft's computed airspeed (CAS) and the wind affecting the descent as they pertain to the crew's actions. This examination showed the following:

- By 10,468 ft in the descent the aircraft reached the selected descent speed of 320 kt. Over the next 30 seconds, as the aircraft descended to 8,136 ft (when the speed brake was extended) the headwind increased from 30 to 39 kt, and the airspeed increased from 320 to 333 kt.
- Over the next 5 seconds, as the aircraft descended from 8,136 ft to 7,790 ft, the headwind increased from 39 to 48 kt, and the airspeed increased from 333 to a peak of 339 kt. At this point the back pressure on the FO's control column was recorded as 41.5 lb, and CWS-P engaged with a peak g loading of 2.14 g.
- One second later the back pressure on the FO's control column reduced to 2 lb, consistent with a release of the back pressure, with a minimum g loading of 0.066.
- The speed brake was stowed about 10 seconds later at 7,492 ft.

Training and guidance in overspeed management

The following overspeed management training and guidance was provided to flight crew:

- **B737-NG Flight Crew Training Manual content.** 'Crews routinely climbing or descending in windshear conditions may wish to consider a 5 to 10 knot reduction in climb or descent speeds to reduce overspeed occurrences…During climb or descent, if VNAV or LVL CHG pitch control is not correcting the overspeed satisfactorily, switching to the V/S [vertical speed] mode temporarily may be helpful in controlling speed.' The cruise section of the manual also stated that 'there have been reports of passenger injuries due to over-controlling the airplane during high altitude, high airspeed flight when overriding the control column with the autopilot engaged…'.
- **High- and low-speed briefing document (valid from February to July 2015).** 'High speed descents need to be managed carefully when operating near areas of steep wind gradients or expected turbulence…Reducing speed prior to entering areas of large wind change is the best technique...It is preferable to accept a temporary overspeed (provided it is not excessive or sustained) rather than a breach of altitude or large abrupt control inputs at high altitude...'. The document also recommended 'the momentary use of V/S if other modes are not correcting the

[7] A weather advisory service issued to warn of potentially hazardous (significant) or extreme meteorological conditions that are dangerous to most aircraft, such as thunderstorms or extreme turbulence.

overspeed.' and that 'CWS P may be required but must be applied smoothly with small inputs at high altitude. Speed brake use is also recommended to assist recovery in the cruise.'

- **Recurrent simulator training program on overspeed events.** Guidance to crew for the simulator session on overspeed events stated that 'use of VNAV PATH with high descent speeds…is not recommended in turbulent conditions or areas of steep wind velocity changes'. This simulator session had not been completed by either flight crew member at the time of the occurrence.

Procedures for FMC updates – wind data, QNH and temperature deviations

The B737 Flight Management Computer System Reference Manual (2015) stated that 'the descent forecasts page [on the FMC] enables the pilot to enter descent wind data to more accurately define the descent path and allow for varying conditions'. It also outlined that 'ISA DEV' (the temperature deviation from the international standard atmosphere standard (ISA)[8]) and QNH[9] can be manually entered. The ability to enter QNH and temperature deviation is designed to increase the accuracy of the VNAV PATH construction by the FMC, as it allows the FMC to compensate for deviations from ISA QNH and temperature values at sea level.

Virgin's Flight Crew Operating Manual documented that during the pre-flight procedure, pilots enter 'initial data' and 'navigation data' into the FMC. This included entering three of the four available predicted descent winds from the flight plan. These four winds included at FL 350, FL 250 and FL 150 and 5,000 ft. The three selected winds were entered into the descent forecast page.

If an aircraft is fitted with an aircraft communications addressing and reporting system (ACARS), wind data can be automatically uploaded into the FMC once the flight plan has been loaded during pre-flight duties. This also facilitates receipt of updated descent wind information if requested. At the time of the occurrence, Virgin's procedures did not include updating descent winds in flight or a requirement to enter the temperature deviation and QNH. The captain reported that if there is a 'really strong' head or tailwind at the top of descent, the crew may decide to amend the FMC top of descent point (either earlier or later) and use the VNAV SPD vertical mode[10].

In this occurrence, the flight plan wind information was generated 3 hours and 10 minutes before the scheduled arrival time. The aircraft was fitted with ACARS, however updated descent wind data was not requested and the temperature deviation and QNH were not entered before approaching Adelaide. This was not inconsistent with the then Virgin procedures.

Procedures for securing the cabin before landing

The procedures for securing the cabin on descent were documented in the Virgin Flight Crew Operating Manual and Standard Operating Procedures. The following is a summary of those procedures:

- Not below FL 200, the pilot monitoring (PM) makes the public address 'cabin crew prepare for landing.' In response, the cabin crew commence the 'galley secure' actions including stowing all galley items, switching off equipment such as ovens and securing all latches. About 10 minutes is provided for cabin crew to complete these actions.
- Around transition (10,000 ft), flight crew select the fasten seatbelt sign ON, which triggers cabin crew to complete the 'cabin procedure' actions. This includes ensuring that all passengers

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8 A standard atmosphere agreed by the International Civil Aviation Organization that includes a standard pressure at mean sea level of 1013.25 hPa and 15 °C.

9 Altimeter barometric pressure subscale setting to provide altimeter indication of height above mean seal level in that area.

10 VNAV SPD is an automated descent mode primarily designed to keep the aircraft at a predetermined speed. During descents in this mode, airspeed is controlled using aircraft pitch whilst the thrust levers remain at idle.

have their seatbelts fastened, their seat backs upright and that any cabin baggage is stowed. These actions take about 1 minute.

Related occurrences

Overspeed occurrences on descent

Between 2012 and 2015, 51 occurrence reports were submitted to the ATSB that involved an overspeed in a B737 aircraft on descent. Of these, two occurred during high-speed descents. Of the other occurrences, three reported the use of CWS-P This included investigation AO-2012-138 below.

ATSB investigation AO-2012-138

The crew of a Boeing 737-800 aircraft was conducting a flight from Adelaide, South Australia to Canberra, Australian Capital Territory. Just prior to commencing descent, ATC cleared the aircraft to conduct a high-speed descent. The aircraft descended below the 7,000 ft altitude clearance limit and, after being alerted to this by ATC, the flight crew climbed the aircraft back to 7,000 ft and continued the approach to land. The ATSB found that the combination of auto-flight system mode changes (including inadvertent use of CWS-P) and the management of the airspeed during the descent resulted in a high workload environment. This occurrence highlighted the need to continually monitor descent profiles and airspace limitations in relation to the aircraft’s position.

Safety analysis

High-speed descent and potential overspeed

As part of their consideration of the effect of the 'fairly strong' winds on the approach, the flight crew discussed the possible effect of turbulence on cabin safety. Similarly, the crew considered the aircraft's turbulence penetration speed when accepting the high-speed descent. However, the captain recalled that whilst they were aware of changing wind conditions, there was no forecast of severe turbulence, and therefore a descent at 320 kt was considered by the crew to be appropriate. Although likely influenced by the routine use of 320 kt for high-speed descents, the descent at that speed, when the maximum certified limiting speed was 340 kt, increased the risk of an overspeed.

In considering the influences on crew decision making, Orasanu (2010) stated:

> What constitutes an appropriate course of action depends on the affordances of the situation. Sometimes a single response is prescribed in company manuals or procedures. At other times, multiple options exist from which one must be selected.
>
> Poor decisions may…arise when a flight crew is aware of conditions that require a decision, but underestimates the level of risk associated with the conditions…Another arises from pilots' routine experience. If similar…situations have been encountered in the past and a particular course of action has succeeded, the crew will expect to succeed the next time with the same response.

Likewise, Sitkin (1992) as cited in Orasanu (2010) stated that uniformly positive experiences provide no baseline by which to determine when a situation is becoming more dangerous.

The crew reported that selecting 320 kt for a high-speed descent was routine, indicating that this course of action was expected to be successful. Therefore, the likelihood that the crew would consider the risks of an overspeed in this case were harder to identify.

The Flight Safety Foundation (2014) recommended that the pilot monitoring role should include monitoring the aircraft's flight path and immediately bringing any concern to the pilot flying's attention. In this case, the captain was monitoring the aircraft's speed, before focussing on the first officer (FO) as he extended the speed brake and then other operational tasks associated with the descent. Whilst this precluded the captain's ability to detect the FO's reaction to an increasing speed trend vector, it was reasonable that the captain felt that the situation was under control.

Orasanu (2010) outlined that the development of expertise contributes to decision making in different ways. This included the development of 'stored condition-action patterns', where decision makers interpret a cue pattern as being of a particular type and match it with an action according to a routine (Klein, 1989 and 1993 cited in Orasanu 2010).

In this case, the FO identified an immediate need to prevent an overspeed, and did so by pulling back on the control column and activating control wheel steering-pitch (CWS-P). This had previously been successful for the FO in addressing an impending overspeed, but the difference in this case was that the force required was larger than experienced by the FO in past situations. The flight data recorded a 41 lb back pressure on the FO's control column with a resulting 2.14 g loading on reversion to CWS-P. Given the altitude at the time, reversion to CWS-P was considered contrary to Virgin Australia Pty Ltd's (Virgin) guidance and training in overspeed management. However, the use of the CWS-P mode was reported common among some pilots and, in this case, had possibly become a stored condition-action pattern.

Surprise is a cognitive-emotional response to something unexpected. It results from a mismatch between the individual's mental expectations and what actually happens around them. Experiencing surprise is a combination of physiological, cognitive and behavioural responses (Rivera and others 2014). If a pilot is not expecting things to go wrong, then the level of surprise can result in taking no action, or the wrong action (Martin 2012).

In this case, the FO reported feeling a ‘pinch’ when CWS-P activated. This, combined with feeling a high g loading, led the FO to abruptly release the amount of back pressure 1 second after its application.

A combination of a sudden increase, followed by a sudden decrease in g loading would have first pushed the occupants of the aircraft towards the floor, followed shortly after by a feeling of weightlessness. This would have increased the difficulty of moving around the cabin and the risk of injury.

Flight management computer data entry procedures

In this occurrence the QNH variation, temperature deviations and descent winds were insufficient to contribute to an inaccurate VNAV PATH construction. In addition, at the time of the occurrence there was no procedural requirement after pre-flight to enter QNH and temperature deviation data, nor to update descent wind data in the descent forecast page of the flight management computer. There was also no guidance on the benefits of entering that data into the computer to produce a more accurate calculated vertical flight path. In some circumstances, the use of pre-flight data would reduce the accuracy of the calculated vertical flight path and result in increased crew workload in managing the energy state of the aircraft.

Training in the management of overspeeds

At the time of the occurrence, Virgin’s Flight Crew Training Manual and other guidance material included information on how to effectively handle an impending overspeed. However, the simulator training session in which crews practiced overspeed management (including on descent) had not been completed by the crew. This simulator session was subsequently completed by all Virgin B737 flight crew, and additional guidance has also been provided.

Early preparation of the cabin for landing

The procedures for preparing the cabin for landing required their commencement no later than FL 200. In this case, the flight crew identified that turbulence on descent may increase the risk of injury to crew and passengers and therefore decided to initiate the cabin preparation at about FL 270. Flight data for the descent showed that this provided an additional 2 minutes before the occurrence for the crew to secure galley equipment and prepare the cabin, including seating all passengers. This reduced the risk of more serious and numerous injuries to the cabin crew and passengers.

Findings

From the evidence available, the following findings are made with respect to the flight path management occurrence involving a Virgin Australia Airlines Pty. Ltd. B737-8FE, registered VH-YID, on descent into Adelaide Airport, South Australia on 9 May 2015. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

Contributing factors

- Although routinely used for high-speed descents, the selected speed for the descent of 320 kt was close the aircraft's maximum speed of 340 kt and, in combination with the increased headwind as the aircraft descended through about 8,000 ft, increased the risk of an overspeed.
- After identifying the unexpected rapid increase in airspeed, the first officer applied sufficient back pressure on the control column to override the autopilot with the intention of avoiding the impending overspeed. This increased the g loading on the aircraft to an extent where safely walking in the cabin would be difficult.
- In response to feeling the increased g loading, the first officer abruptly released the back pressure on the control column, resulting in a sudden pitch change and reduced g loading that led to the cabin crew member losing their footing and sustaining a knee injury.

Other factors that increased risk

- The Virgin Australia Airlines Pty. Ltd. procedures did not require flight crew to update the QNH, temperature deviation or the descent winds in the flight management computer after departure. In some circumstances, this would reduce the accuracy of the calculated flight path and increase crew workload in managing the aircraft's energy state.
- At the time of the occurrence, the Virgin Australia Airlines Pty. Ltd. training included a focus on the management of overspeeds. However, the associated simulator training session had not been completed by the crew, increasing the risk that they would not react in accordance with the published operational guidance material.

Other findings

- The earlier-than-usual preparation of the cabin for landing meant that, at the time of the occurrence, the cabin crew were in the final stages of that activity. This reduced the risk of more serious and numerous injuries to the cabin crew and passengers.

General details

Occurrence details

Date and time:	9 May 2015 - 1933 CST	
Occurrence category:	Incident	
Primary occurrence type:	Flight path management occurrence	
Location:	55 km from Adelaide Airport, South Australia	
	Latitude: 34° 46.643' S	Longitude: 139° 5.176' E

Aircraft details

Manufacturer and model:	Boeing B737-8FE	
Registration:	VH-YID	
Operator:	Virgin Australia Airlines Pty. Ltd.	
Type of operation:	Air transport – high capacity	
Persons on board:	Crew – 6	Passengers – 83
Injuries:	Crew – 1	Passengers – 0

About the ATSB

The 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.

Australian Transport Safety Bureau

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Investigation

ATSB Transport Safety Report
Aviation Occurrence Investigation

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