Australian Government
Australian Transport Safety Bureau

Incorrect configuration involving an Airbus A320, VH-VGT

near Gold Coast Airport, Queensland, 31 March 2014

ATSB Transport Safety Report
Aviation Occurrence Investigation
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Addendum

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Incorrect configuration involving an Airbus A320, VH-VGT

What happened

On 31 March 2014, an Airbus A320 departed Auckland, New Zealand for a scheduled passenger flight to Gold Coast, Queensland. The first officer was designated as the pilot flying (PF) and the captain was designated as the pilot monitoring (PM).[1]

A320 EFIS control panel

Source: EFB Desktop

On departure from Auckland, the local barometric pressure (QNH) was 1025 hPa, and the crew had selected 'STD' for the standard atmospheric pressure of 1013 hPa[2] on the altimeters during climb to flight levels[3].

During the cruise, about 15 minutes prior to commencing the descent for the Gold Coast, the crew obtained the automatic terminal information service (ATIS) for Gold Coast and the captain wrote the details onto the take-off and landing data (TOLD) card, including: cloud, which was 'scattered' (3-4 oktas[4]) at '025' (2,500 ft); temperature 25 °C; and barometric pressure (QNH) 1018 hPa. The crew then conducted the approach briefing in accordance with company standard operating procedures, including a review of this information, which was entered into the flight management guidance computer (FMGC) for the approach.

After receiving clearance from air traffic control (ATC), the first officer commenced the descent. ATC cleared the aircraft for track shortening on three segments of the planned track, and for a high speed descent. The aircraft therefore arrived at each waypoint slightly above the planned level. The first officer selected a speed of 320 kt, higher than the speed of 280 kt that had been entered into the FMGC, to regain the descent profile. ATC cleared the aircraft to descend to flight level (FL) 130, where the first officer briefly levelled the aircraft off prior to receiving clearance to descend to 9,000 ft AMSL.

On initial clearance to below the transition altitude, ATC provided the local QNH for Gold Coast of 1018 hPa, which the captain read back and confirmed that it matched the QNH entered into the FMGC. When passing about 11,500 ft AMSL on descent, the captain received further clearance from ATC.

The 'transition' checklist was normally initiated by the PM however he was communicating with ATC at that time. The first officer pointed to the barometric reference (BARO REF) push button on the electronic flight information system (EFIS), in an attempt to alert the captain to initiate the check. The company standard procedure was that the PM would call 'transition' and select the correct page on the FMGC with the approach QNH set. The PF would then read the QNH off that screen and enter it into the altimeter on the EFIS. The PM would then enter the value into the second altimeter, and the PF would enter the value into the standby altimeter. All three would then be cross-checked.

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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 In Australia, FL 110 is the 'transition level', at and above which all aircraft operate with the standard pressure altimeter setting of 1013.2 hPa. The 'transition altitude' is 10,000 ft above mean sea level (AMSL) and aircraft operating at or below that altitude use either the local current QNH or the current area forecast QNH.

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 130 equates to 13,000 ft.

4 Cloud coverage is reported by the number of 'oktas' (eighths) of the sky that is occupied by cloud.

Approaching transition altitude, the BARO REF warning light flashed and the first officer was cognisant of having the correct local QNH selected prior to passing the transition level of 10,000 ft AMSL to ensure separation with other aircraft. As the captain did not respond and initiate the transition check, the page in the FMGC with the QNH displayed had not been selected. The first officer glanced at the TOLD card, and entered 1025 into the altimeter, possibly inadvertently interpreting either the cloud (025) or the temperature (25) as the QNH, instead of 1018.

The captain then completed the communication with ATC and commenced the transition check by stating 'transition'. At this time the captain omitted to select the FMGC onto the flight plan page to display the QNH that had been entered. The first officer stated 'set QNH 1025' and the captain entered that into the second altimeter and the first officer entered the same value into the standby altimeter and a cross check confirmed that all three altimeters matched.

The crew then conducted the approach checks and continued the descent to 5,000 ft AMSL and subsequently joined the Required Navigation Performance (RNP) approach on a downwind leg at 2,500 ft AMSL. The first officer configured two stages of flap, reduced the airspeed to 160 kt and intercepted the vertical approach path for the RNP approach. The radio altimeter (RADALT) auto callout sounded at 2,500 ft AGL, as the aircraft flew over the sea, and the first officer cross-checked with the altimeter which was also reading about 2,500 ft AMSL. This check therefore did not alert the crew that an incorrect QNH was set. All cockpit instrument indications were normal and indicated the correct approach path based on the QNH that had been set on the altimeters.

Passing about 1,000 ft AMSL, as the first officer completed the turn onto final approach, he observed the T-VASIS[5] indicating a 'fly-up' profile. He asked the captain whether he thought the profile looked wrong and the captain advised that it may look different due to the local terrain. The captain checked the instruments and calculated the height against the distance remaining to the runway to verify the profile. The first officer continued the approach and selected the landing gear down and the third and fourth stages of flap. The RADALT callout of 500 ft sounded and the first officer realised that the approach path was incorrect. When at about 159 ft above ground level, the enhanced ground proximity warning system (EGPWS) 'terrain' warning sounded, and the first officer commenced a missed approach. The first officer checked the QNH on the TOLD card and realised an incorrect QNH had been set.

On the second approach, when again over water, with the QNH set to 1018, the first officer noted that when the RADALT indicated 2,500 ft, the altimeter indicated about 2,340 ft.

Crew comments

The crew reported that in Australia, air traffic control provide the QNH for the arrival destination when providing the clearance through the transition altitude, which the crew read back and cross-check against the QNH entered in the FMGC. After setting the QNH, there are no further requirements for ATC to provide the QNH. In New Zealand, on first contact with approach, the crew are again given the QNH. This provides a cross check between the QNH that has been set in the altimeters with the actual QNH.

The first officer commented that having set the altimeter prior to the standard 'transition' check, and not in conformance with standard procedure, he should have identified that as a potential threat and advised the captain. He also reported that reducing the aircraft speed approaching transition, may have reduced the workload at the time.

The captain commented that if he had prioritised setting the QNH over communicating with ATC approaching the transition altitude, he may then have checked the QNH in the FMGC and set the correct QNH.

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[5] A 'T' shaped Visual Approach Slope Indicating System that uses high intensity lighting to assist pilots identify the correct glidepath to the runway.

Airbus comments

Airbus has advised the ATSB that they have commenced a design review to conduct an automated cross check between air data inertial reference system (ADIRS) and flight management system (FMS) QNH values. Such a feature may have alerted the crew to the fact that the QNH entered into the FMGC differed from the altimeter QNH setting.

Safety message

The ATSB SafetyWatch highlights the broad safety concerns that come out of our investigation findings and from the occurrence data reported to us by industry. One of the safety concerns is data errors, such as the wrong figure being used as well as data being entered incorrectly, not being updated, or being excluded, www.atsb.gov.au/safetywatch/data-input-errors.aspx.

In this incident, the incorrect data was entered and there was a subsequent omission to check the data. Risk controls including procedures, systems, reference materials, crew management practices and training were assessed as being adequate, however local conditions of time pressure and distraction may have contributed to the incident.

This incident highlights the impact distractions can have on aircraft operations, particularly during a critical phase of flight. Research conducted by the ATSB found that distractions were a normal part of everyday flying and pilots generally responded to distractions quickly and efficiently. It also revealed that 13 per cent of accidents and incidents associated with pilot distraction between January 1997 and September 2004 occurred during the approach phase of flight. The study also identified four occurrences associated with checklists and suggested that, if a checklist is interrupted, pilots should consider returning to the beginning of the checklist to reduce the potential for error. *Dangerous Distraction: An examination of accidents and incidents involving pilot distraction in Australia between 1997 and 2004* is available at: www.atsb.gov.au/publications/2005/distraction_report.aspx.

General details

Occurrence details

Date and time:	31 March 2014 – 0840 EST	
Occurrence category:	Serious incident	
Primary occurrence type:	Incorrect configuration	
Location:	near Gold Coast Airport, Queensland	
	Latitude: 28° 09.87' S	Longitude: 153° 30.28' E

Aircraft details

Manufacturer and model:	Airbus Industrie A320-232	
Registration:	VH-VGT	
Operator:	Jetstar Airways	
Serial number:	4178	
Type of operation:	Air transport high capacity – passenger	
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.