Australian Government
Australian Transport Safety Bureau

Incorrect configuration involving Airbus A320, VH-FNP

Newman Airport, Western Australia, 24 July 2013

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Aviation Occurrence Investigation
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Addendum

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Incorrect configuration involving Airbus A320, VH-FNP

What happened

On 24 July 2013, an Airbus Industrie A320 aircraft, registered VH-FNP (FNP), was being operated on a scheduled passenger flight from Perth to Newman, Western Australia. The first officer (FO) was designated as the pilot flying.

Newman Airport

Source: Google earth

Prior to reaching the top-of descent point at about 115 NM from Newman Airport, the crew conducted an approach briefing. The briefing included items relevant to Newman, such as runway dimensions, traffic, terrain, weather, the missed approach procedure, and the decision to use 'Flap Full'[1] for the visual approach. The FO then entered the briefed data into the aircraft's flight management guidance system (FMGS). This data allowed the FMGS to compute an approach path for the aircraft to the touchdown point on runway 05.

During the descent, on leaving controlled airspace, air traffic control advised the crew of a Cessna Titan survey aircraft operating in the circuit area at Newman. The crew reported that the descent and the initial part of the approach went according to plan. The captain, as the pilot monitoring, operated and monitored the radio and made all the required radio broadcasts as the aircraft approached Newman. The captain reported that, as the common traffic advisory frequency (CTAF) was quite busy, he spent a considerable amount of time on the radio managing separation from both arriving and departing aircraft.

Approaching Newman from the south, the crew had planned to be at 1,500 ft above ground level (AGL) at 5 NM on final approach. At about 0941 Western Standard Time,[2] as the aircraft turned onto a 5 NM final, the FO commenced flying the flight path vector (FPV),[3] disconnected the autopilot and flight director, and manually flew the aircraft. The weather at the time was a clear day with minimal wind.

When on final approach, the crew reported everything was going to plan and as briefed. The aircraft was on the correct glidepath and on speed. By 500 ft AGL, the landing gear had been extended and 'Flap 3' was selected (Figure 1). As the visual approach had been programmed into the FMGS, the crew expected to receive the automatically generated callout of '500' (500 ft AGL), at which stage they would verify that the approach was stable and the aircraft was configured for landing. On this occasion, neither pilot could recall this callout occurring.

Shortly after, the crew received a ground proximity warning system (GPWS), 'TOO LOW FLAP' warning. The FMGS had been programmed for a 'flap full' landing, but at the time of the warning, Flap 3 was selected. The FO was focussing on the later part of the approach and assessed the aircraft to be at around 500 ft AGL. The FO called 'Flap Full - landing checklist'. At that stage, the captain was maintaining a visual lookout for other traffic and negotiating separation via the radio. With the exception of the final stage of flap, an assessment was made that the aircraft was within all the correct parameters, and it was determined that the safest course of action was to select 'Flap Full' and land. 'Flap Full' was selected, the GPWS warning silenced, and the aircraft landed safely at about 0943.

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1 Flap Full in the A320 refers to 40 degrees of flap.

2 Western Standard Time (WST) was Coordinated Universal Time (UTC) + 8 hours

3 Flight path vector on the Primary Flight Display is used to monitor the descent profile (often referred to as the BIRD).

CTAF recordings

Recordings of the CTAF transmissions obtained by the ATSB identified that there were a number of aircraft operating at Newman at the time. In the 10 minute period prior to FNP landing, there was an inbound helicopter, an arriving aeromedical flight, and a departing scheduled passenger service. The Cessna Titan survey aircraft was also conducting sweeping runs across the north-western part of the circuit area.

Captain experience and comments

The captain held an Air Transport Pilot (Aeroplane) Licence with a total of about 20,190 hours, of which 1,368 hours were on the A320 aircraft.

The captain provided the following comments:

- As the pilot monitoring, the captain was focussed on maintaining separation for FNP with several aircraft within the vicinity, as well as supporting the FO. The captain reported that the workload associated with operating a high performance jet aircraft amongst a mix of other aircraft types, as well as continual efforts to visually acquire traffic, contributed to a temporarily oversight of completing the landing checklist and selecting the final stage of flap.
- The fact that the aircraft was on the correct glidepath and at the approach speed contributed to a sense that the flight was progressing normally.
- There may have been a reliance on, and expectation that the automated 500 ft callout would occur.
- On previous occasions the aircraft failed to provide the 500 ft automatic callout.
- He then assessed that the safest course of action was to select 'Flap Full' and land, rather than go-around and place the aircraft in potential conflict with the survey aircraft and departing aircraft .

First officer (FO) experience and comments

The FO held an Air Transport Pilot (Aeroplane) Licence with a total of about 12,213 hours, of which 1,032 hours were on the A320 aircraft.

The FO provided the following comments:

- There was a reasonable amount of traffic at Newman on the day. The captain and FO continually discussed the traffic and its potential threat to FNP.
- He belived the main concern for FNP was a light aircraft, which departed runway 05 as FNP intercepted final approach. The aircraft was still on upwind during the later stage of their approach. While the crew had lost visual contact with the aircraft, it was still observed on the traffic collision avoidance system (TCAS).[4]
- In the past, the aircraft had occasionally failed to generate the automatic callout at 500 ft AGL.

Recorded information

The aircraft was fitted with a flight data recorder (FDR) and following the incident, the data was downloaded and provided to the ATSB. The data showed the following (Figure 1):

- the aircraft was on the correct vertical and lateral path during the approach
- no large changes in pitch or roll were made
- thrust was stabilised
- vertical speed was not excessive

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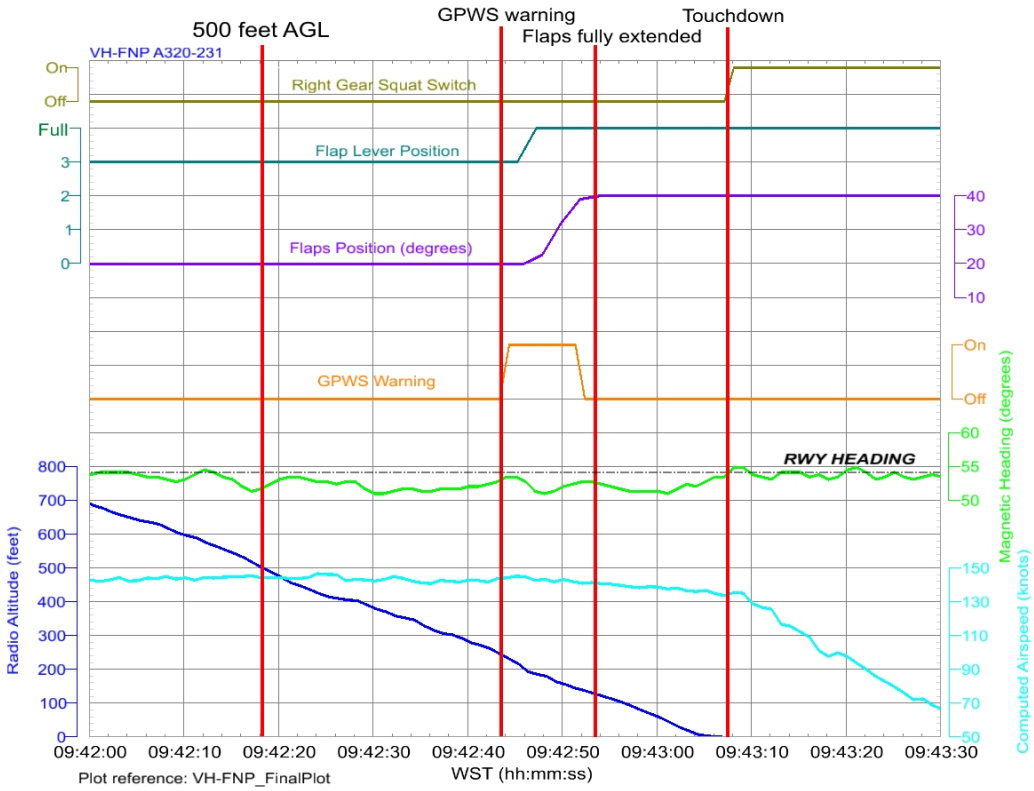
[4] Traffic collision avoidance system (TCAS) is an aircraft collision avoidance system. It monitors the airspace around an aircraft for other aircraft equipped with a corresponding active transponder and gives warning of possible collision risks.

- the GPWS warning activated at 231 ft Radio Height
- Full flap was selected at 185 ft
- The flaps were fully extended at approximately 144 ft

Figure 1: Summary of flight data



Source: Australian Transport Safety Bureau

Virgin Australia Regional Airlines investigation

Virgin Australia Regional Airlines conducted an internal investigation and determined the following:

- The approach was considered unstable as the aircraft was not in the desired landing configuration by 500 ft AGL, in visual meteorological conditions, as 'Flap Full' had not been selected.
- While the crew did not conduct a go-around as per the company stable approach policy, the captain believed that the safest option was to land.
- The both engines operating missed approach or go-around in daytime visual meteorological conditions should be conducted on runway track, provided obstacle clearance is assured.
- Based on the aircraft's maximum landing weight, a 'Flap 3' landing with autobrake 'low' selected would have required a landing distance in excess of the landing distance available.[5] However, if 'medium' autobrake was selected or manual braking was used,there would have been sufficient landing distance available with 'Flap 3' selected.

[5] Runway 05 is 2,072 m in length.

Safety action

Virgin Australia Regional Airlines

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

- The company's standard go-around procedure is to be reviewed with regard to the requirement to maintain runway track
- A remedial training program was developed for the crew, which included human factors; simulator training; a simulator check; line training; and a line check.

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 the handling and management of approaches http://www.atsb.gov.au/safetywatch/handling-approach-to-land.aspx. When compared to other phases of flight, the approach and landing has a substantially increased workload. Pilots and crew must continually monitor the aircraft and approach parameters, and the external environment to ensure they maintain a stable approach profile and make appropriate decisions for a safe landing.

A report published by the United States Navy/National Aeronautics and Space Administration (NASA) Ames Research Center observed concurrent task demands on the flight deck. This research showed that pilots are forced to make decisions interwoven with their well-practiced sequences. This often leads to adding, shedding or rescheduling actions. The report also highlights that distractions pose a continual threat to even the most meticulous and experienced pilot. The report, *Cockpit interruptions and distractions: A line observation study* is available at: http://human-factors.arc.nasa.gov/awards_pubs/publication_view.php?publication_id=48.

General details

Occurrence details

Date and time:	24 July 2013 – 1000 WST	
Occurrence category:	Incident	
Primary occurrence type:	Incorrect configuration	
Location:	Newman Airport, Western Australia	
	Latitude: 23° 25.07' S	Longitude: 119° 48.17' E

Aircraft details

Manufacturer and model:	Airbus Industrie A320-231	
Registration:	VH-FNP	
Operator:	Virgin Australia Regional Airlines Pty Ltd	
Serial number:	429	
Type of operation:	Air transport - high capacity	
Persons on board:	Crew – 4	Passengers – 98
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.