



Australian Government

Australian Transport Safety Bureau

Foreign object damage involving Airbus A320, VH-VGY

Auckland International Airport, New Zealand, 27 October 2017

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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

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Addendum

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Foreign object damage involving Airbus A320, VH-VGY

What happened

On 27 October 2017, at about 1900 Co-ordinated Universal Time,¹ a Jetstar Airways Airbus A320 aircraft, registered VH-VGY, was being prepared for a scheduled passenger service from Auckland International Airport, New Zealand to Sydney, Australia. The captain was designated as the pilot flying and the first officer was the pilot monitoring.²

At about 1909, the leading hand had finished loading the last container into the aircraft hold and was organising his paperwork. As it was raining, he decided to put the clipboard in the right engine (No. 2) cowling to stop his paperwork from becoming wet and blown by the wind, with the intention to retrieve it later. The leading hand went to the flight deck, gave some paperwork to the flight crew, and returned to the ground to organise the aircraft's push back.

At about 1919, the dispatcher cleared the ground and servicing equipment from the aircraft and conducted the 'duty of care' walk-around. During the walk-around, she noticed the clipboard in the right engine and thought that the leading hand would return for it, so she continued with the walk-around. Soon after, the engines reportedly started normally.

At about 1925, when the aircraft was taxiing, the leading hand realised his clipboard with the paperwork was missing and thought the dispatcher had the paperwork. The leading hand asked the dispatcher about the clipboard and she mentioned she saw it in the right engine during the walk-around. The ground crew returned to where they were preparing the aircraft and noticed paper debris on the ground. The ground crew organised for their operations area to contact the flight crew.

At about 1937, the aircraft departed. Shortly after, when on climb through flight level³ 150, the flight crew received a radio call from the Auckland Approach air traffic controller to contact the surface movement controller. The captain handed control of the aircraft to the first officer and contacted the surface movement controller who advised that the ground crew had lost their paperwork and it may have been placed on the engine. The captain requested further information about the paperwork, specifically whether the paper was on top of the engine or inside the inlet. The flight crew checked the engine instruments and there were no abnormal indications. The surface movement controller confirmed that the paperwork was placed within the inlet and paper debris was found on the tarmac (Figure 1). The captain then contacted the company engineer at the airport and asked whether it was just paperwork or a clipboard with a metal clip. The engineer advised that a piece of sheared metal had been found. The flight crew decided to return to Auckland.

After landing at about 2048, the engine was inspected by engineers and paper was found throughout the engine. They also found minor damage to an engine fan blade and attrition liner.⁴

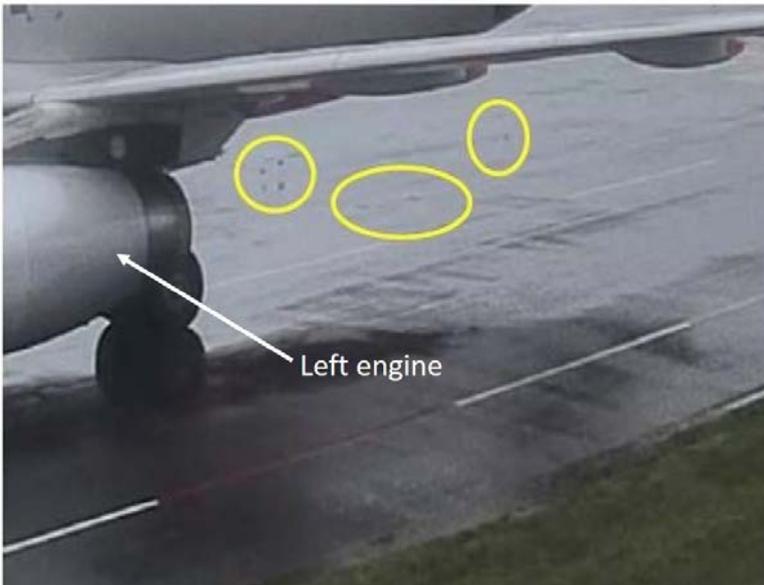
¹ Co-ordinated Universal Time (UTC): the time zone used for aviation. Local time zones around the world can be expressed as positive or negative offsets from UTC.

² Pilot flying (PF) and pilot monitoring (PM): 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 the aircraft's flight path.

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). FL150 equates to 15,000 ft.

⁴ A layer of material lining the inside of the fan case adjacent to the fan blade tips. The attrition liner is designed to abrade away during abnormal, or extreme, engine operation without damaging the fan blades.

Figure 1: Foreign object debris on the ground behind the aircraft (circled)



Source: Aerocare, modified by the ATSB

Additional comments

The leading hand stated that, due to the wind and rain, he felt the need to shelter the paperwork. Normally, staff use the pushback tractor for shelter during adverse weather and to prepare paperwork for the flight. There is a metal box on the loader to store the folder. However, as the pushback tractor was not yet present at the bay, he used the engine cowling. He recalled that he did not feel pressured to rush the departure.

The dispatcher stated that she did not view the clipboard as a foreign object as it belonged to the leading hand and had the paperwork for the flight. She assumed that the leading hand would retrieve it later, prior to engine start-up.

The captain stated that, to obtain more information about the incident, numerous calls were made to other agencies, which took considerable time. Further, due to poor communications, he was unable to contact the operator's maintenance controller to discuss the engine's status.

Procedures

The internal investigation into the incident by the ground handling operator, Aerocare, noted that the Jetstar Airways operational manual detailed the responsibilities of the dispatcher when conducting the 'duty of care' walk-around and provided a table of the steps involved for this process. While there was no specific requirement to check the engine cowlings/intakes for foreign objects, the manual stated that all staff operating near the aircraft were to be constantly observant for abnormalities and to report these to the leading hand or supervisor prior to the aircraft departing.

The investigation also noted that there was no procedure for the ground crew to establish communications with the flight crew in the event of a non-normal or emergency situation, either prior to or after the aircraft had departed. Further, there was no guidance on how paperwork was to be prepared and managed by ground crew during adverse weather conditions.

Previous occurrences

A search of the ATSB database found the following occurrence where a foreign object has been left on an aircraft:

- On 3 November 2015, the pilot conducted a maintenance test flight in a Eurocopter AS365 N3 helicopter, registered VH-WPX, at Jandakot Airport, Western Australia (ATSB investigation [AO-2015-127](#)). During the post-flight inspection, following this test flight, a licenced aircraft maintenance engineer noticed two large gouges to the leading edge of one of the main rotor blades. A spanner that had been used during the track and balance related adjustments could not be located. It was later located on an adjacent taxiway about 43 m from the hangar. Due to the scuff marks and scratches found on the spanner, it was determined that it had been left in the rotor head area and was likely ejected during engine start up.

Findings

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

- While preparing the aircraft for departure, the leading hand placed a clipboard in the right engine, which was subsequently ingested during start-up.
- During the walk-around, the dispatcher noticed the clipboard in the right engine, but believing it would be retrieved prior to the aircraft departing, the dispatcher did not notify the leading hand or supervisor of the foreign object debris as per company procedures.

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.

Safety notices

Both Jetstar Airways and Aerocare have released a notice, which outlines that foreign object debris also includes items accidentally left behind. It further states that engines are not to be touched or used for the placement of items, and emphasises the responsibilities of ground crew to manage foreign object debris by clearing them and reporting their presence to other crew.

Updated procedures

As a result of this incident, Jetstar Airways released an updated aircraft dispatch procedure, which included:

- a specific warning about not placing items in the engine cowling
- improved detail around checks and responsibilities
- a section on emergency and non-normal procedures
- detailing methods for re-establishing communications between ground crew and flight crew such as visually gaining the attention of the flight or contacting them via radio.

Safety message

The presence of foreign object debris poses a significant threat to aircraft safety. It has the potential to cause aircraft damage during critical phases of flight, costing airlines and airports millions of dollars each year. This incident demonstrates the effect foreign object debris has on aircraft operations and emphasises the importance of not placing objects in aircraft engines. It further highlights that all staff operating near aircraft are responsible for reporting any non-normal events they encounter. It should not be assumed that others will perform a task where a hazard has been identified. Assuming other people will undertake a task, such as removing a hazard increases the risk of the task not being completed.

General details

Occurrence details

Date and time:	27 November 2017 – 1922 UTC	
Occurrence category:	Incident	
Primary occurrence type:	Foreign object damage	
Location:	Auckland International Airport, New Zealand	
	Latitude: 37° 00.48' S	Longitude: 174° 47.50'E

Aircraft details

Manufacturer and model:	Airbus A320	
Registration:	VH-VGY	
Operator:	Jetstar Airways	
Serial number:	4177	
Type of operation:	Air Transport - high capacity	
Persons on board:	Crew – 6	Passengers – 149
Injuries:	Crew – 0	Passengers – 0
Aircraft damage:	Minor	

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.