Australian Government
Australian Transport Safety Bureau

Aircraft flight preparation occurrence involving Boeing 787-9, VH-ZNJ

Melbourne Airport, Victoria on 22 September 2021

ATSB Transport Safety Report
Aviation Occurrence Investigation (Short)
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Addendum

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Safety summary

What happened

On the evening of 21 September 2021, a Boeing Company 787-9, registered VH-ZNJ and operated by Qantas Airways was prepared for a freight flight from Melbourne, Victoria, to Los Angeles, United States. This involved removing covers from the pitot probes and static ports, among other tasks, associated with restoring the aircraft to flight status following an aircraft 'park' procedure.

At about 0825 on 22 September 2021, a pre-flight exterior inspection was conducted by one of the flight crew, with no anomalies detected. The aircraft was also subject to a pre-departure exterior inspection by ground service dispatch personnel, before departing Melbourne at about 0900. The aircraft landed at Los Angeles about 14.5 hours later, following an uneventful flight. During the post-flight inspection, engineering identified that all 4 engine fan cowl static ports were covered with tape.

What the ATSB found

The ATSB found that tape covering the 4 fan cowl static ports was not removed by engineering, as per the manufacturer's procedures, nor identified by flight crew or dispatch during pre-departure checks. This resulted in the aircraft departing with reduced redundancy to the engine electronic control system. Despite that, the flight crew reported the flight was uneventful, and a review of the flight data confirmed there was no adverse effect to aircraft or its engine systems.

What has been done as a result

Following the occurrence, the operator distributed memos to engineering, flight and ramp crew, highlighting the location of the fan cowl static ports and that they may be covered when aircraft were parked for certain periods. The memos further reinforced the importance of following the documented engineering, pre-flight and dispatch procedures.

In addition, the operator has amended the aircraft 'park' and 'restore' engineering instructions to reference the manufacturer's procedures. Further, these instructions will now identify the static port locations, to ensure consistency in maintenance practices.

Safety message

When performing safety-critical tasks like aircraft maintenance, it is very important that procedures are clear and unambiguous to avoid misinterpretation and error such as occurred in this incident.

'Remove before flight' streamers are a reminder to remove covers, or lockout devices, prior to flight. Failure to remove these devices and covers can prevent the functionality of certain aircraft systems. In certain circumstances, the streamers may be fixed to the aircraft and not hang freely, which can reduce their visibility. Targeted inspection of locations and components, rather than relying on streamers, which can detach, can help to identify when these covers or devices have not been removed.

The investigation

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 investigation was conducted in order to produce a short investigation report, and allow for greater industry awareness of findings that affect safety and potential learning opportunities.

The occurrence

Maintenance prior to the occurrence flight

On 20 September 2021, a Boeing Company (Boeing) 787-9, registered VH-ZNJ (ZNJ) and operated by Qantas Airways, was flown from Los Angeles, United States to Melbourne, Victoria, landing at 1727 Eastern Standard Time.[1] The aircraft was to remain parked at domestic Bay 11 until the next scheduled flight (the occurrence flight), about 39 hours later.

Where an aircraft was to be on the ground between 24 and 72 hours, Qantas required it to be subject to 'normal' parking procedures.[2] A licenced aircraft maintenance engineer (LAME 1) was tasked to park ZNJ. The park procedures included fitting pitot covers and covering the static ports, in accordance with Boeing recommendations. The 787 has 6 fuselage, 4 engine fan cowl and 4 vertical fin static ports (see the section titled S*tatic ports*). LAME 1 partially completed this task, at 1253 on 21 September 2021, fitting the pitot covers and covering the fuselage and engine fan cowl ports. Unavailability of an elevated work platform operator prevented the covering of the vertical fin ports however, LAME 1 noted this in the aircraft technical log.

Later that day, another LAME (LAME 2) was tasked to conduct the 'restore' procedure, to return the aircraft to flight status, along with some other scheduled maintenance. LAME 2, assisted by an aircraft maintenance engineer (AME), uncovered the pitot and fuselage static ports at about 2000. They then proceeded to complete the other maintenance tasks. Later that evening, LAME 2 noted the endorsement that the vertical fin static ports had not been covered and went back to the aircraft to conduct a precautionary check of the vertical fin. This was to ensure the ports had not been subsequently covered, but inadvertently not entered in the technical log. LAME 2 was unaware that the fan cowl ports had been covered, nor did they check.

Pre-flight ground operations

On the morning of 22 September 2021, ZNJ was prepared for a freight flight from Melbourne to Los Angeles. A third LAME (LAME 3) was tasked to complete the certificate of return to service (CRS). This included verifying all maintenance tasks had been completed and certified for. LAME 3 did not inspect the aircraft, nor were they required to as part of this procedure. The CRS was certified at about 0800, in readiness for the flight crew to arrive and commence their pre-flight checks. The flight crew consisted of the captain, two first officers and two second officers. The captain tasked one of the second officers to conduct the pre-flight exterior inspection.

At about 0825, the second officer (SO) commenced the exterior inspection at the aircraft nose, in line with standard procedures. The SO identified a pitot cover on the ground however, it could not be determined if it was from ZNJ or another aircraft. For the duration of the exterior inspection, the SO held the pitot cover, while trying to locate an engineer. Shortly after completing the exterior inspection, with no issues identified, the SO located an engineer and handed over the pitot cover. The SO returned to the flight deck and informed the captain the exterior inspection was completed, with the pitot cover the only anomaly. As the fifth crew member, the SO was seated in the cabin for take-off.

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1 Eastern Standard Time (EST): Coordinated Universal Time (UTC) + 10 hours.

2 There were separate procedures for longer term parking.

Dispatch for Qantas 787 aircraft in Melbourne was contracted to Dnata.[3] The dispatch crew member (dispatcher) conducted their walkaround inspection at about 0856, just prior to pushback. The dispatcher did not notice the fan cowl ports were covered and the aircraft subsequently departed Melbourne at about 0910.

Post-flight inspection

The aircraft landed at Los Angeles at about 0640 local time on 22 September 2021 (2340 EST), following an uneventful flight. During the post-flight inspection, a member of Qantas engineering identified that all 4 fan cowl ports were covered. The flight crew reported no abnormalities regarding aircraft performance were detected. A review of flight data confirmed that the covered ports had no effect on the operation of the aircraft during the flight.

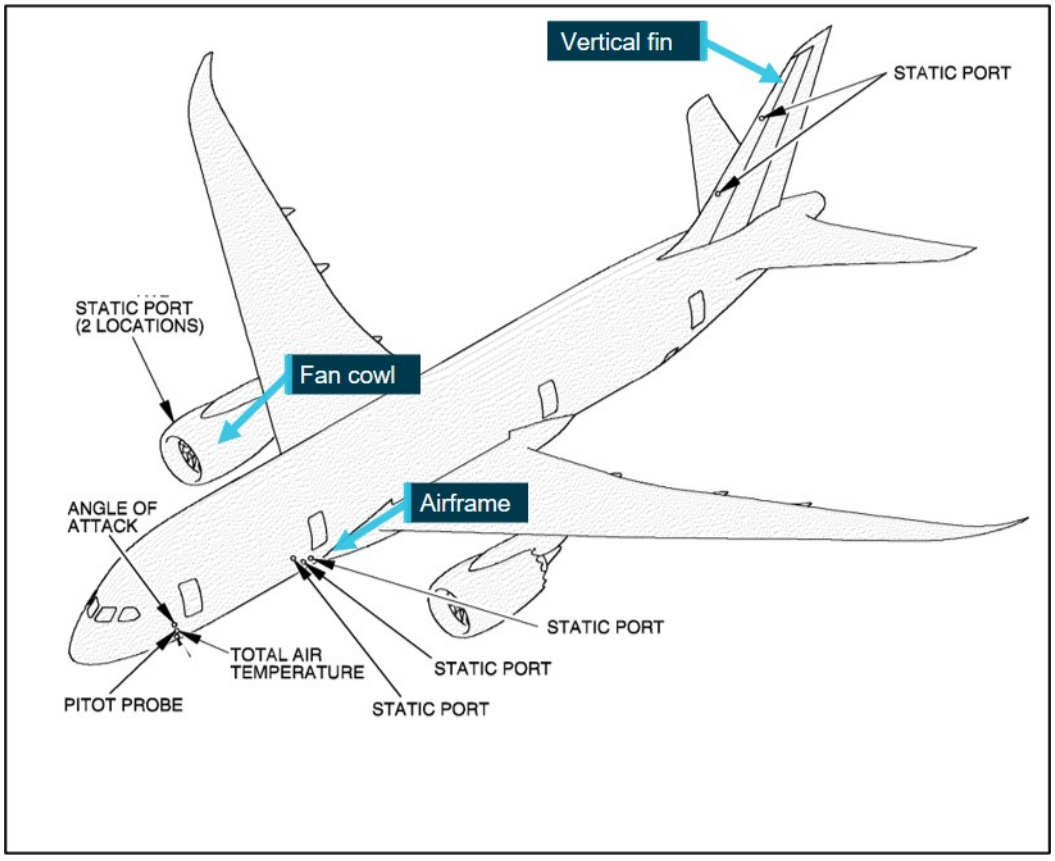
Context

Static ports

The Boeing 787 has the following static ports:

- 6 fuselage, 3 each side
- 4 fan cowl, 2 per engine (located at approximately the 4 and 8 o'clock positions, with the fan cowl ground clearance between 68 and 80 cm)
- 4 vertical fin, 2 each side.

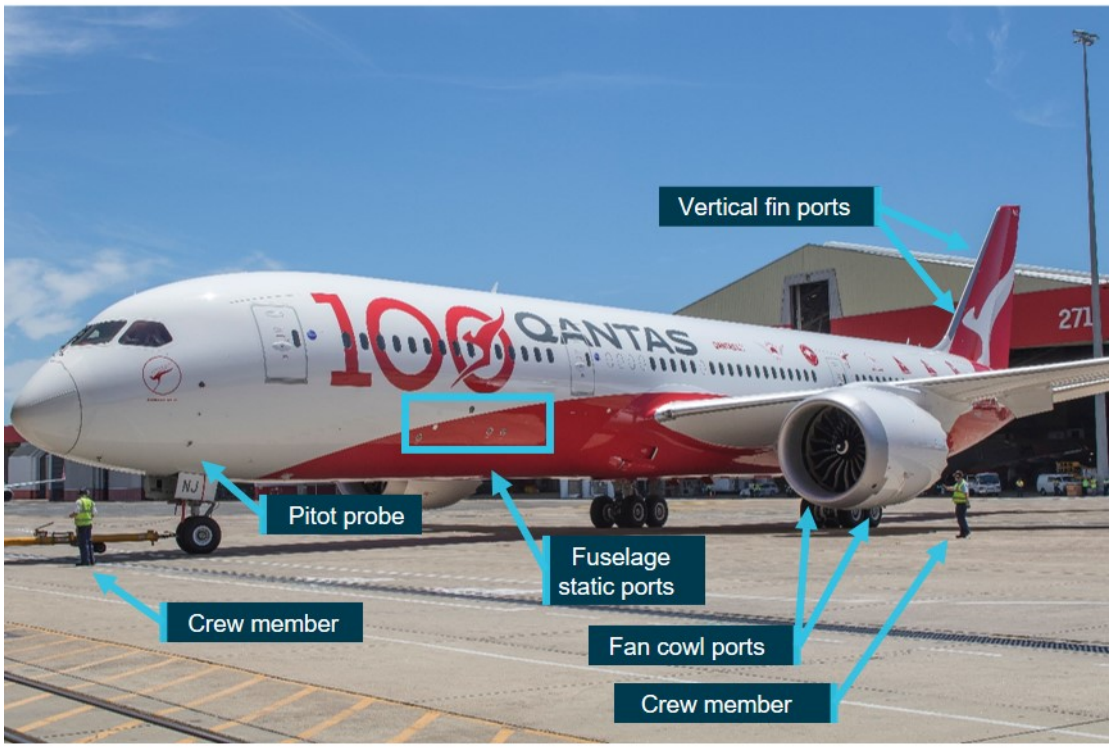
Figure 1: Static port locations (duplicated on the opposite side of the aircraft)



Source: Qantas, annotated by ATSB

[3] Dnata provided aircraft ground handling, cargo, travel, and flight catering services in Australia and internationally.

Figure 2: VH-ZNJ pitot and static locations.



Source: Cooper Simmons

The fuselage static ports provide ambient air pressure data to the air data reference system (ADRS).[4] The ADRS provides primary, secondary and standby air data (airspeed, angle of attack and altitude) to the pilots' electronic flight instrument system displays, as well as other systems on the aircraft such as the engines, autopilot, aircraft flight control system. The vertical fin static ports form part of the 'gust suppression' system.[5]

The engine electronic control (EEC) uses the ambient air pressure data from the ADRS for engine control algorithms, engine thrust calculations and to optimise engine performance. The fan cowl static port air pressure data is only used when an EEC determines that the ADRS data is unreliable. Where no ambient pressure data is available, the EEC assigns a failsafe mode for continued engine operation.

Boeing 'aircraft normal parking' procedures

The Boeing aircraft maintenance manual (AMM) detailed the procedure 'to park the airplane for less than seven days'. This procedure was to be completed within 3 days of the aircraft landing. Section B detailed the required steps, and included:

- Install dedicated covers on the total air temperature (TAT) and pitot probes.
- Cover the fuselage and vertical fin static ports and cover the fan cowl static ports. This step was to be completed referencing *Probe locations* (as noted in Figure 1) and the *Static port cover procedure*.

Additional covers (including engine covers) and other procedures (such as disabling electrical systems) were recommended, depending on various conditions, such as parking location and

[4] Air pressure, ambient from the airframe static ports and dynamic from the pitot probes, is converted into a digital output by the air data modules.

[5] Example: if a strong horizontal wind gust were to hit the aircraft, the system calculates the pressure differential between the right and left sides of the vertical fin, then moves the rudder to counteract that gust to improve passenger comfort.

climate. Covering of static ports was to prevent the ingress of insects, dirt or other material that could affect operation of the ADRS.

A separate AMM procedure detailed the requirements to return the aircraft to operation.

Static port cover procedures

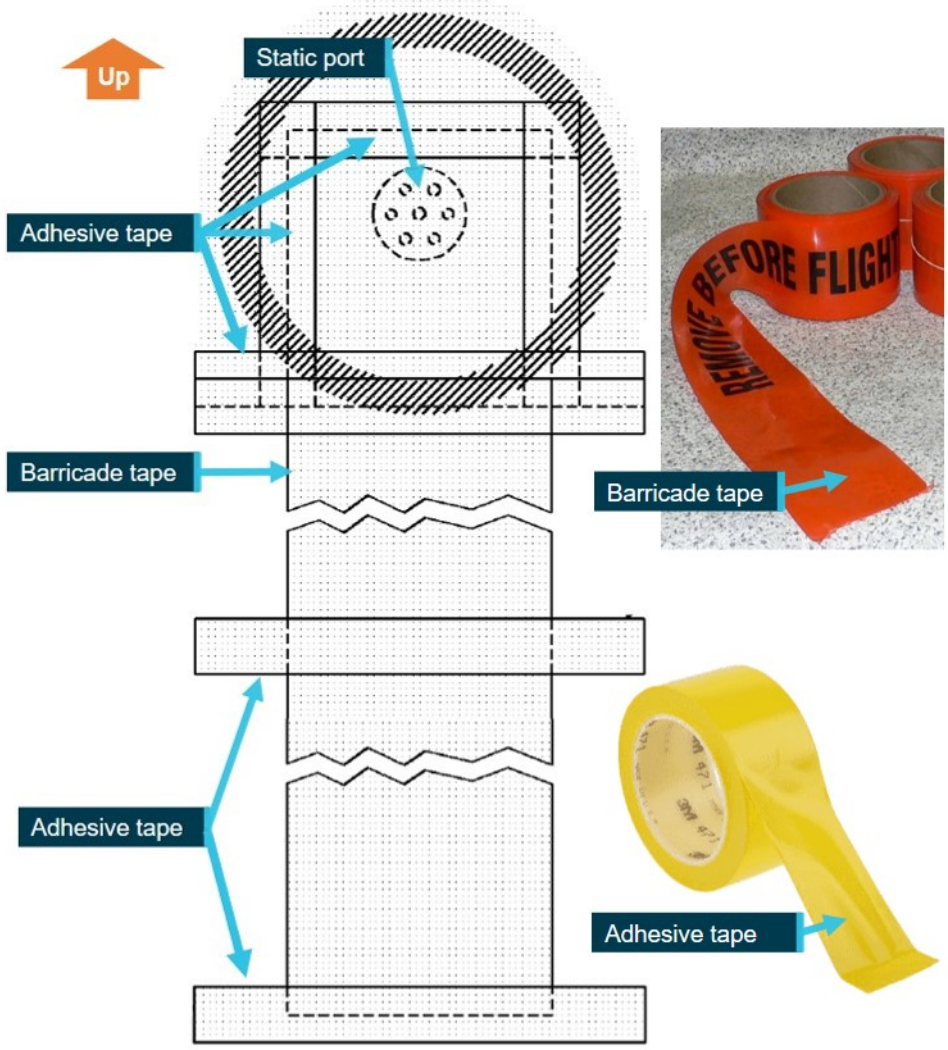
The Boeing procedure for covering all the static ports described placing one end of a metre-long piece of barricade tape[6] over the port (Figure 3). Adhesive tape sealed the top and sides of this end to the fuselage or cowl. Adhesive tape was then placed over the barricade tape at the bottom of the port, leaving an opening for moisture to drain. Finally, adhesive tape was to be applied to the barricade tape, about half length, and at the bottom end.

Boeing advised that, taping down the end of the barricade tape was intended to prevent it being torn from the fuselage by strong winds. The use of 1-metre-long red barricade tape, along with the yellow adhesive tape, was to enhance the visibility of the static port covers. Further, Boeing advised:

> Covering the vertical fin and engine fan cowl static ports is recommended by Boeing. The procedures and timelines provided in the AMM are Boeing's recommendations based on best practices. Operators can deviate from the AMM but it remains the operator's responsibility to ensure the aircraft and engine systems are adequately protected.

[6] The airframe and vertical fin ports were covered using the barricade tape. Boeing recommended using grease-proof paper to cover the fan cowl static ports.

Figure 3: Boeing static port cover procedure



Source: Boeing and Qantas, modified and annotated by ATSB

The AMM also recommended placards[7] that stated *pitot probes covered* and *static ports covered* be fitted to the left (captain's) control wheel. The placards were to be removed during the 'restore' AMM procedure however, they also alerted flight crew and maintenance personnel to the covered items should the aircraft be operated while 'parked', for example an engine run.

Qantas aircraft parking procedures

Qantas developed job instruction cards (JICs) for both parking, and then restoring the aircraft back to service.

The JIC for parking between 24 and 72 hours prioritised certain tasks from the Boeing procedure, including fitting landing gear downlock pins, setting flight controls to neutral selections and electrical power deactivation.[8] Pitot probe and static port covers were to be installed 'as soon after arrival as possible'. The task 'cover the static ports' and 'attach *static ports covered* tag', referenced the applicable section of the AMM. Qantas utilised a locally manufactured sign for the flight deck, which combined the two tags into one placard (Figure 4).

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7 The AMM recommended the size and colour of the placards, which could be manufactured locally.

8 Other tasks, such as installing engine covers, would be implemented for ground time greater than 72 hours, and were listed on a separate JIC.

Figure 4: Control column warning placard

Source: Qantas

The JIC also contained the following warning:

> When there are covers on the [fuselage/ADRS] static ports, make sure that personnel can see that condition from the ground. Attach a tag to the left control wheel in the flight compartment to show that the static ports have covers. Covers on the static ports can cause large errors in airspeed and altitude signals. This is dangerous during flight'.

The JIC for restoring the aircraft included the tasks 'remove all barricade tape and adhesive tape from all of the static ports' and 'remove the *static ports covered* tag. It also included a warning of adverse outcomes if these covers were not removed prior to flight. The AMM procedure for static port cover removal was not referenced in the JIC.

Maintenance on VH-ZNJ

The parking JIC was completed by LAME 1 about 17 hours after the aircraft landed, they made the following comments and observations:

- prior to the parking JIC, they completed a Check 2, which included general visual inspection of the engine intake and cowling
- they elected to cover the inboard fan cowl static ports with the barricade tape oriented 'up' as they believed orienting it down would have it positioned low under the fan cowl, reducing its visibility to someone walking around the aircraft.

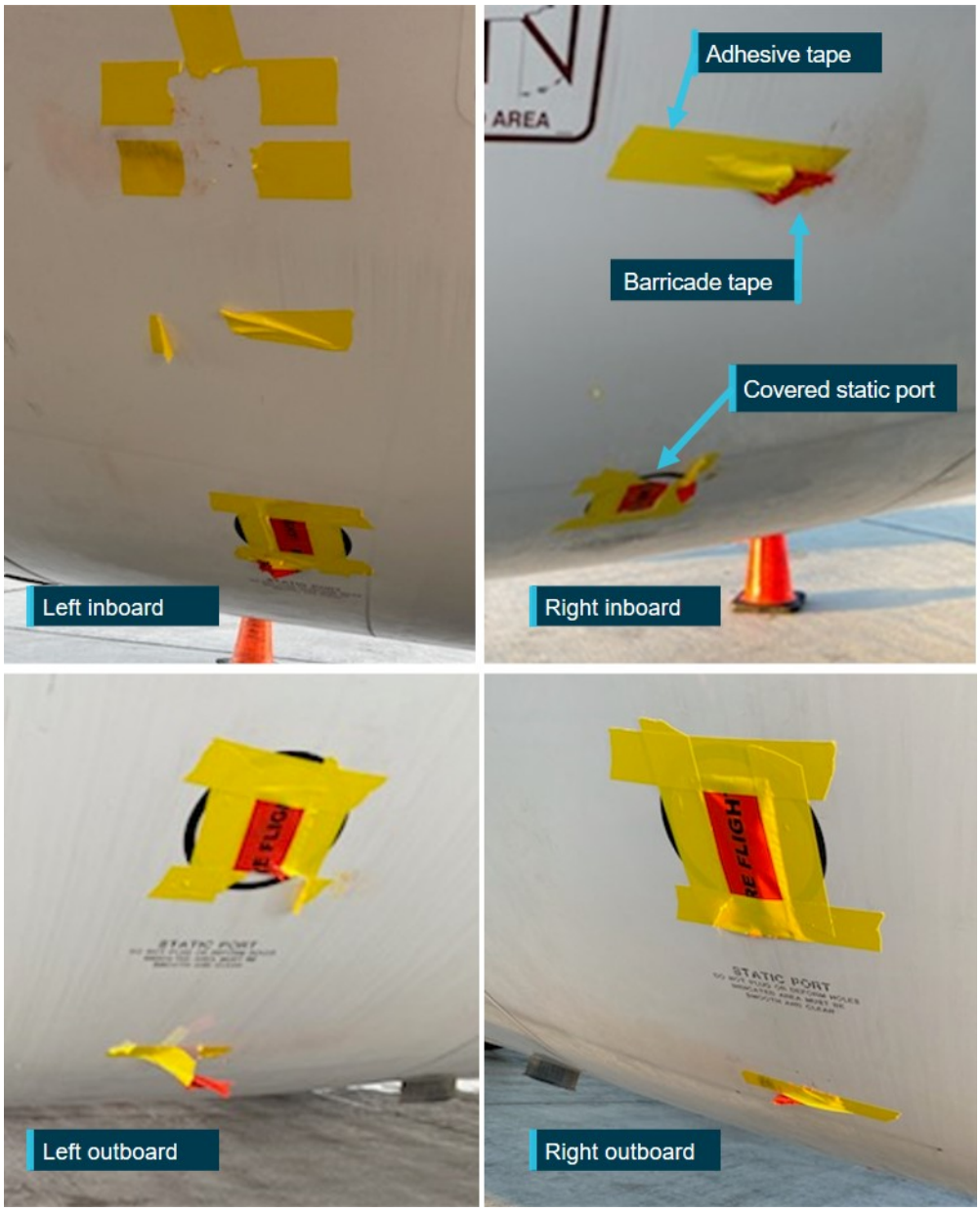
Restoring the aircraft from the park configuration was completed by LAME 2 about 9 hours later in the evening. LAME 2 made the following comments and observations:

- in Melbourne, prior to COVID-19, aircraft not flown for 4-5 days did not generally have pitot and static covers fitted. When aircraft were parked for longer periods, especially during the reduced flying throughout the early COVID-19 times, they were 'parked' with all covers fitted. Since operations started to ramp up again, they were tasked to 'park' aircraft within 24 hours of landing, only to reverse this procedure a short time later
- the 787 is the only aircraft operated by Qantas with fan cowl ports on the outside of the engine cowl which require covering
- they had rarely seen the vertical fin or fan cowl ports covered for the 24-72 hour parking and, as such, were not expecting them to be covered on ZNJ
- engineering crew was reduced that night, due to illness, and the local conditions were cold, windy and rainy

- when they noted the endorsement which stated the vertical fins had not been covered, they returned to the aircraft to ensure this was still the case.

Images of the covers on the 4 fan cowl static ports taken post-flight showed that while the 'tail' of the barricade tape was missing, the remaining adhesive tape was consistent with the Boeing static port cover procedure. The only exception being the inboard ports were covered with the tail oriented up, in line with LAME 1's actions (Figure 5).

Figure 5: VH-ZNJ on arrival at Los Angeles, showing remains of fan cowl static port covers.



The static ports were still covered however, the remains of the 'tail' can be seen in the images. In addition, the images show that the inboard port covers had the tail oriented up with the outboard covers oriented down.
Source: Qantas, annotated by ATSB

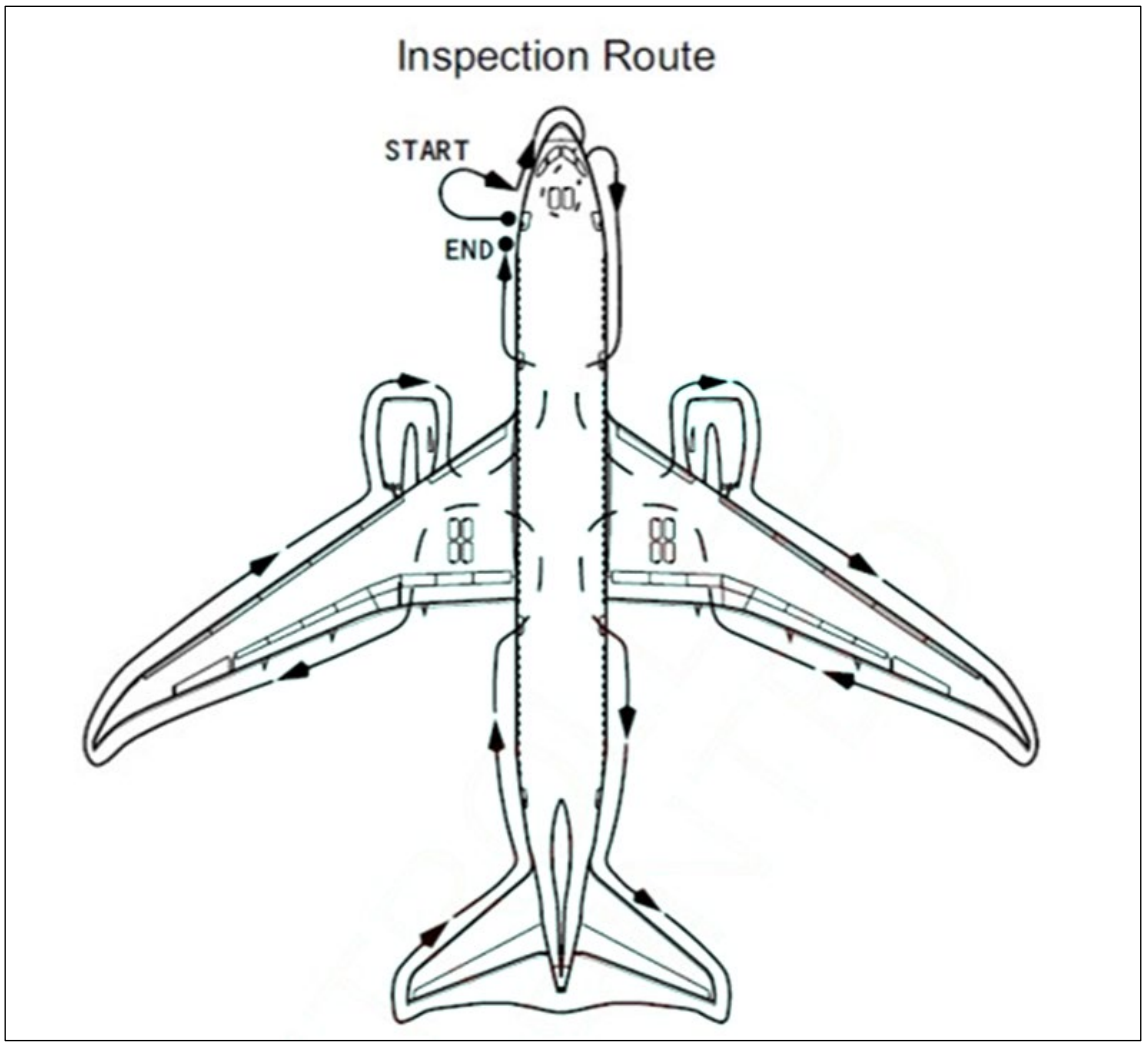
Flight crew procedures

The Qantas flight crew operations manual (FCOM) described the requirements of the flight crew exterior inspection. It required that, 'before each flight the captain or delegated flight crew member must verify that the airplane is satisfactory for flight'. The FCOM included a diagram of the inspection route (Figure 6) around the aircraft and a list of inspection items at each location. The introduction identified the overall inspection requirements including to check that:

- there are no suspicious or unidentified objects
- the probes, vents and static ports are clear and not damaged.

The inspection requirements were the same for each engine and included the note to ‘check’ the ‘probes, sensors, ports, vents and drains (as applicable)’.

Figure 6: Exterior inspection route



Source: Qantas

A brief description of the major components of the ADRS was included in the FCOM. It identified that there were 6 static ports, 3 on the left and 3 on the right side of the airframe. The FCOM contained no reference to the vertical fin or fan cowl static ports.

Second officer comments

The second officer (SO) recalled that they had conducted 1 or 2 exterior inspections during their initial 787 training between December 2019 and March 2020, and then 4 or 5 since returning to flight operations in June 2021.[9] The SO reported that they were:

- aware of the fan cowl ports but not that they could be covered by tape

[9] The SO did not conduct any flights between April 2020 and May 2021 due to COVID-19 related reduction in Qantas operations. In addition, other flight crew members had conducted the exterior inspection on some flights since June 2021.

- somewhat distracted during the exterior inspection, trying to locate someone from engineering to hand the pitot cover to
- of the belief that Qantas engineering conduct a pre-flight inspection prior to the flight crew arriving at the aircraft.

Dispatch procedures

Dnata had been contracted by Qantas to carry out receipt and dispatch procedures for the 787, since the aircraft's introduction in 2017. All other Qantas aircraft types operating at Melbourne Airport had receipt and dispatch activities conducted by Qantas engineering. Dnata also provide ground services to other operators at Melbourne Airport, and on different aircraft types.

The Dnata 'pre-departure walkaround inspection' documentation included checking ground equipment was clear of the aircraft and all doors were closed. The inspection route was similar to that of the Qantas FCOM exterior inspection. Static port covers were not mentioned however, step 11 stated:

> Pitot tubes and all other external sensors are undamaged, nor any other abnormalities on the aircraft observed (e.g. fluid leakage).

Qantas Ramp Operations Manual procedures were to be followed by Dnata staff, for receipt and dispatch of the 787. This manual identified the importance of removing the pitot covers however, there was no reference to any static covers, nor any guidance to 'tape' and what to do if it was observed.

Dnata dispatcher comments

The Dnata dispatcher reported that the COVID-19 pandemic had resulted in reduced crew experience level (particularly those who could dispatch aircraft) and regular roster changes. Two crews were operating that morning however reportedly, 'it got quite busy'. Further, they advised that they:

- Had been tasked to be part of the ground crew loading ZNJ, before moving to load the aircraft of another operator, with a different crew dispatching ZNJ. As they were moving to the other aircraft, they were directed to remain and dispatch ZNJ. Once ZNJ was dispatched, they were to proceed to the other operator's aircraft.
- Felt a degree of time pressure, to keep to various operator's schedules and 'may have failed to complete the [pre-departure] checks'.
- Mostly just checked that doors and panels were closed, equipment out of the way, obvious damage etc.
- Were not aware of the fan cowl static ports.
- Might not necessarily question tape on the aircraft as 'there are engineers there all the time, that is theirs, so we don't even think to question it'.

Other information

CCTV footage

A review of CCTV footage of Bay 11 identified:

- the fan cowl static port covers could be seen in certain views
- overhead lighting was sufficient on both sides of the aircraft to enable LAME 2's removal of the pitot probe and fuselage static port covers without the need for torches
- no obvious interruptions while LAME 2 and the AME were removing the pitot and airframe static covers
- LAME 2 and the AME walked past the engines several times while completing other maintenance tasks however, there was no indication either specifically looked at the engine fan cowls

- the SO and the dispatcher did not conduct their exterior inspections in line with the documented procedures and exterior inspection route.

Similar occurrences

ATSB investigation (AO-2021-026)

On 21 June 2021, a Boeing Company 787-9, registered VH-ZNH and operated by Qantas Airways, was prepared for a scheduled passenger flight from Sydney, New South Wales, to Perth, Western Australia. During initial climb, the flight crew selected the landing gear lever to UP. Shortly after, they received a warning, indicating that neither main landing gear had retracted to the 'up and locked' position. Despite consulting the aircraft's electronic checklist, the flight crew were unable to resolve the retraction issue. The landing gear lever was then selected to DOWN, with positive gear extension indications, and the aircraft returned to Sydney for an uneventful landing.

The ATSB found that two of the five downlock pins, one in each main landing gear, had not been removed following towing of the aircraft to the domestic terminal aircraft bay. In addition, these gear pins were not identified during subsequent external inspections, prior to the departure. This resulted in the aircraft departing without the functionality to retract the main landing gear.

ATSB investigation (AO-2018-053)

On 18 July 2018, Malaysia Airlines Airbus A330-300, registered 9M-MTK, was scheduled to operate on a regular public transport flight from Brisbane, Queensland to Kuala Lumpur, Malaysia.

Soon after landing at Brisbane Airport, covers were placed on the aircraft's 3 pitot probes. Subsequent inspections during the turnaround did not identify the presence of the pitot probe covers and they were not removed prior to the aircraft's departure.

After take-off, while following troubleshooting procedures for unreliable airspeed indications, the crew turned off the 3 air data reference systems (ADRS). This activated the aircraft's backup speed scale. The flight crew also used groundspeed information from air traffic control and the aircraft's radar altimeter to prepare for a return to Brisbane. Normal landing gear extension could not be accomplished with all three ADRs off.[10] The flight crew performed a landing gear gravity extension before conducting an overweight landing.[11]

A subsequent inspection identified that the pitot probe covers were still fitted to the aircraft's 3 pitot probes after it landed.

Safety analysis

In this occurrence, multiple factors led to VH-ZNJ departing with the fan cowl static ports covered. Specifically:

- Typical covers and lock-out devices incorporate a 'streamer' that hangs down and flap in the breeze. In contrast, the Boeing static port cover procedure, while including a 1 metre long tail, required this tail be taped down.
- The fan cowl port covers were below eye level, making them more difficult to identify without specifically bending down to view under the engine.
- While the Qantas documentation for parking the aircraft linked to the Boeing procedures, the restore instructions did not. This was a missed opportunity to assist engineers to readily access the current procedures and determine which ports were covered.
- The Qantas maintenance procedures required the static ports to be covered but did not specify the locations, allowing potentially different interpretations of the procedure between

[10] A safety valve prevents landing gear extension above 280 kt and must be overridden when airspeed is not available.

[11] An 'overweight' landing is conducted at an aircraft weight higher than certified maximum landing weight.

LAMEs/engineers. In addition, the emphasis of the warnings was more in line with the fuselage (ADRS) static ports, rather than possible issues associated with the fan cowl or vertical fin covers not being removed. Further, as it was likely that different engineers would 'park' and 'restore' the aircraft, listing the static port locations with a separate endorsement for each, would have eased identification of which ports were covered.

- The SO identified a pitot cover on the ground, at the beginning of their exterior inspection, and reported to continuing the inspection while trying to locate an engineer. It could not be determined if this distraction contributed to their non-normal exterior inspection.
- The dispatcher did not conduct their exterior inspections as per the documented procedures, which reduced the effectiveness of this risk control.

Research has demonstrated that people are more likely to detect targets when they are expected and less likely to detect targets that are not expected (Wickens and McCarley 2008). In addition, bias can occur when prior knowledge, combined with an expected outcome, influences decision making. LAME 2 did not expect the fan cowl ports to be covered and, as such, did not specifically check them. In addition, the flight and dispatch crew inspections are carried out after engineering have released the aircraft for flight and typically no issues are identified. Further, the SO stated their expectation that engineering had completed an inspection. This likely led to their exterior inspections being conducted with no expectation of finding any anomalies.

Further, while not contributing to this occurrence, the dispatcher reported that, had they identified the tape covering the fan cowl ports, they may not have questioned this due to an assumption it was required.

Findings

ATSB investigation report findings focus on safety factors (that is, events and conditions that increase risk). Safety factors include 'contributing factors' and 'other factors that increased risk' (that is, factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report for the purpose of increasing awareness and enhancing safety). In addition 'other findings' may be included to provide important information about topics other than safety factors.

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

From the evidence available, the following findings are made with respect to the flight preparation event involving Boeing 787-9, registration VH-ZNJ, discovered at Los Angeles International Airport, United States on 22 September 2021.

Contributing factors

- Tape covering the 4 engine fan cowl static ports was not removed by engineering, as per the manufacturer's procedures, nor identified by flight crew or dispatch during pre-departure checks. This resulted in the aircraft departing with reduced redundancy to the engine electronic control system.
- Qantas procedures did not identify all of the aircraft's static ports and the procedure for restoring the aircraft back to service did not reference Boeing procedures. This allowed different interpretations of which ports would be covered.

Other factors that increased risk

- Boeing's static port cover procedure involving the taping down of the 'streamer' tail, although intended to prevent it being torn from the fuselage in strong winds, likely reduced the visibility of the fan cowl static port covers.

Safety actions

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. All of the directly involved parties are invited to provide submissions to this draft report. As part of that process, each organisation is asked to communicate what safety actions, if any, they have carried out to reduce the risk associated with this type of occurrences in the future. The ATSB has so far been advised of the following proactive safety action in response to this occurrence.

Safety action by Qantas

Qantas advised of the following safety actions:

Engineering

- Amended job instructions cards to link with Boeing maintenance procedures and identify static port locations.
- Memo issued to engineering personnel highlighting the fan cowl static port location on the 787 aircraft.

Flight operations

- Memo issued to flight operations detailing the fan cowl static ports, and that they may be covered during parking. In addition, the memo noted that engineering may not necessarily conduct an exterior inspection prior to dispatch and highlighted the importance of flight crew vigilance 'to ensure they are an effective last line of defence in assessing the aircraft's readiness for flight'.
- Amended flight crew return to work training to include an exterior inspection video and briefing.

Ground support services

- Memo issued to ramp operations staff reminding them of the importance of the pre-departure inspection and that it be conducted as per the procedures. In addition, the memo advised ramp personnel to immediately raise any concern with engineering or the flight crew.

Safety action by Dnata

Dnata advised they conducted an internal investigation. In addition, reminders have been issued to all staff during pre-shift briefings highlighting the importance of a thorough walkaround.

Safety action by Boeing

Boeing advised that, to increase visual awareness that that the fan cowl static ports have been covered, they will add a procedural requirement to maintenance manual procedures that a warning tag be added to the flight control wheel specifically stating, 'engine static ports covered'. The revision is scheduled for release in June 2022.

Sources and submissions

Sources of information

The sources of information during the investigation included:

- Qantas
- Dnata
- Boeing
- Melbourne Airport

References

Wickens, C.D. and McCarley, J.S (2008). Applied attention theory. Boca Raton, FL: CRC Press.

Submissions

Under section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. That section allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the following directly involved parties:

- Qantas, including the involved engineering and flight crew
- Dnata, including dispatch crew
- Boeing and the United States National Transportation Safety Board

A submission was received from:

- Boeing

The submission was reviewed and, where considered appropriate, the text of the report was amended accordingly.

General details

Occurrence details

Date:	21 September 2021	
Occurrence class:	Incident	
Occurrence categories:	Aircraft preparation, Avionics / Flight instruments	
Location:	Melbourne Airport	
	Latitude: 37° 40.4' S	Longitude: 144° 50.6' E

Aircraft details

Manufacturer and model:	The Boeing Company 787-9	
Registration:	VH-ZNJ	
Operator:	QANTAS AIRWAYS LIMITED	
Serial number:	66074	
Type of operation:	Air Transport High Capacity	
Activity:	Commercial air transport	
Departure:	Melbourne Airport, Victoria	
Destination:	Los Angeles International Airport, United States	
Persons on board:	Crew – 5	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Aircraft damage:	Nil	