

Australian Government Australian Transport Safety Bureau

Flight preparation event involving Airbus A350-941, 9V-SHH

Brisbane Airport, Queensland, on 27 May 2022

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Addendum

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Preliminary report

This preliminary report details factual information established in the investigation's early evidence collection phase and has been prepared to provide timely information to the industry and public. Preliminary reports contain no analysis or findings, which will be detailed in the investigation's final report. The information contained in this preliminary report is released in accordance with section 25 of the *Transport Safety Investigation Act 2003*.

The occurrence

On 27 May 2022, a Singapore Airlines Airbus A350-941, registered 9V-SHH, was being prepared on bay 81 for a regular public transport flight from Brisbane Airport, Queensland to Changi Airport, Singapore, as flight number SQ256. Just prior to the aircraft being pushed back for departure, it was identified that the pitot probe covers were still fitted to the aircraft.

The engineering maintenance contractor had provided a licenced aircraft maintenance engineer (LAME) and an aircraft maintenance engineer (AME) to conduct scheduled receipt, dispatch, certification, and maintenance duties during the aircraft's scheduled 2-hour turnaround.

Apart from performing line maintenance duties, the LAME was also the contractor's regional manager for Brisbane, Wellcamp, and Coolangatta airports. At the time of the occurrence, the LAME was also supervising the AME and assisting with the turnarounds on SQ256 and another aircraft on an adjacent bay.

The AME had started with the contractor 3 weeks prior and had not completed all of their induction training at the time of the occurrence. On the day of the occurrence, the AME was conducting headset duties.

During the preparation of SQ256, the following events occurred:

- Between 0705 and 0727 Eastern Standard Time,¹ the LAME instructed the AME through the
 external walk-around inspection of the transit check for the Airbus A350. At 0732 the AME
 utilised an elevated work platform to install covers on all 4 pitot probes² in accordance with
 airline and company procedures specifically for Brisbane Airport. At about the same time, the
 LAME entered the flight deck to check the technical log for defects. As part of the pitot cover
 installation and removal procedures, the LAME made an entry in the log that the covers had
 been fitted and then placed a warning placard on the flight deck engine control pedestal to also
 show that the pitot covers were fitted.
- Between 0852:18 and 0854:03, the first officer conducted a preflight walk-around. The walkaround was truncated from the nose, to the right engine, across to the left engine and back to the airbridge. The aircraft operator's procedures also required the extremities of the wings, airframe, and tail section to be inspected, however this was not carried out. The first officer looked up at and likely observed the fitted pitot covers, however they were required to be fitted at that time as per the operator's policy.
- At about 0859 the LAME arrived back on bay 81 after tending to an aircraft on an adjacent bay. The LAME conferred with the AME about fuel figures and talked to the flight crew via headset to confirm the fuel upload.
- At 0904 the LAME re-entered the flight deck, certified for the transit check in the technical log, cleared the technical log entry for the fitment of the pitot covers, and removed the pitot cover warning placard from the flight deck pedestal. The LAME then returned to the tarmac and placed the placard on the dash in their work vehicle. The LAME stated that they had not

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

² Pitot probes provide air data computers and flight instruments with airspeed information and are ineffective if covered or blocked.

verified that the pitot covers were removed, or requested that the AME remove the pitot covers, but assumed that they would have been removed by that time.

- At 0913, the LAME returned to the tarmac at the nose of the aircraft and conversed with the AME for about 3 minutes. With 4 minutes remaining until the expected pushback³ time, the LAME told the AME that they were going to the adjacent bay to complete the refuelling of another aircraft. The AME remained at bay 81 to conduct the pushback headset duties (Figure 1).
- An aircraft refueller on an adjacent bay observed that the Singapore Airlines aircraft appeared ready to pushback, but the pitot covers were still fitted. When the LAME reached the aircraft at the adjacent bay, the refueller immediately pointed to the SQ256 and informed the LAME that the pitot covers were still fitted (Figure 2).
- The LAME returned to SQ256 and alerted the AME that the pitot covers were still fitted. At about the same time, the flight crew requested pushback approval from air traffic control and turned on the aircraft beacons. The aerobridge began to retract away from the aircraft.
- The flight crew then notified the AME on the headset that they were ready to pushback. The AME, having just been informed that the pitot covers were fitted, told the flight crew to stand by as they were in the process of removing the pitot covers.
- With 2 minutes remaining until the expected departure time, the LAME positioned an elevated work platform on each side of the nose to remove the pitot covers (Figure 3). Pushback commenced just after the covers were removed.

Figure 1: Security footage of bay 81 showing SQ256 4 minutes before pushback with the pitot covers fitted and the LAME moving towards the adjacent bay



Source: Brisbane Airport Corporation, annotated by the ATSB

³ Pushback: using a tug to push an aircraft backwards from the terminal so that it can then taxi under its own power.



Figure 2: Security footage of the refueler pointing towards SQ256 and informing the LAME that the pitot covers were fitted

Source: Brisbane Airport Corporation, annotated by the ATSB



Figure 3: LAME removing pitot covers 1 minute prior to departure time

Source: Brisbane Airport Corporation, annotated by the ATSB

The security video footage did not show that the required final walk-around of the aircraft was conducted by either the LAME or the AME prior to dispatch.

Related occurrence

Mud wasps are a well-known hazard at Brisbane Airport. They can rapidly build nests in pitot probes and, accordingly, operators and related organisations need to ensure they fit pitot probe covers when aircraft are parked at the airport. Similarly, these organisations need to have procedures to ensure the covers are removed before the aircraft commences taxiing for take-off. An aircraft being cleared to commence taxiing and then take-off with all pitot probe covers still fitted is a serious event.

On 18 July 2018, a Malaysia Airlines Airbus A330, registered 9M-MTK, took off on a regular public transport flight from Brisbane, Queensland to Kuala Lumpur, Malaysia. Covers had been left on the aircraft's 3 pitot. The instruments showed a red speed flag in place of the airspeed indication from early in the take-off, and unrealistically low airspeeds afterwards.

The flight crew did not respond to the speed flags until the aircraft's speed was too high for a safe rejection of the take-off, and the take-off was continued. The flight crew's initial radio announcement of an urgency situation was not heard by the air traffic controller.

The ATSB investigation subsequently identified safety factors across a range of subjects including flight deck and ground operations, aircraft warning systems, air traffic control, aerodrome charts, and risk and change management. In its Safety message section, the ATSB report stated:

The loss of airspeed data due to mud wasp ingress can occur even after brief periods, and the use of pitot probe covers for aircraft turnarounds at Brisbane is largely an effective defence. However, it introduces another risk, which is the potential for aircraft to commence a take-off with pitot probe covers still fitted...

For all individuals working in the aviation industry, the occurrence shows that coordination and diligence can make a difference. Several individuals on the night—as well as their counterparts on other occasions—all acted as though the conduct of various external aircraft inspections was someone else's responsibility; in fact, all had separate, key roles in detecting problems with the aircraft before departure. Had all such inspections been conducted diligently it is very likely that the pitot probe covers would have been seen and subsequently removed...

Further details of this investigation can be found on the ATSB website.

Further investigation

To date, the ATSB has interviewed the engineers and refueller, and reviewed the airport security video footage of the SQ256 turnaround.

The investigation is continuing and will include examination of:

- flight crew pre-flight inspection procedures
- engineering final walk-around procedures
- induction training procedures
- training records for the LAME and AME
- Heston MRO fatigue management policies and procedures
- Heston MRO change management policies and procedures
- security video recordings of aircraft turnarounds

Should a critical safety issue be identified during the course of the investigation, the ATSB will immediately notify relevant parties so appropriate and timely safety action can be taken.

A final report will be released at the conclusion of the investigation.

General details

Occurrence details

Date and time:	27 May 2022, 0915 EST	
Occurrence class:	Incident	
Occurrence categories:	Flight preparation event	
Location:	Brisbane, Queensland	
	Latitude: 27° 23' 3.0012" S	Longitude: 153° 7' 3" E

Aircraft details

Manufacturer and model:	Airbus, A350-941
Registration:	9V-SHH
Operator:	Singapore Airlines
Serial number:	316
Type of operation:	Air Transport High Capacity
Activity:	Scheduled international
Departure:	Brisbane Airport, Queensland
Destination:	Singapore Changi Airport, Singapore
Aircraft damage:	None