Australian Government
Australian Transport Safety Bureau

Publication Date: 16 June 2009 ISBN 978-1-921602-59-7

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INFRA-08530

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ATSB TRANSPORT SAFETY REPORT
Aviation Occurrence Investigation AO-2008-049
Final

Operational non-compliance Sydney (Kingsford Smith) Airport, NSW 17 July 2008

Abstract

On 17 July 2008, an Airbus Industrie A330-300 (Airbus) aircraft was being operated on a scheduled international passenger service from Sydney, NSW to Melbourne, Vic. with 13 crew and 163 passengers. The aircraft commenced a takeoff without having received a take-off clearance by Air Traffic Control. At the same time, a Boeing 737 had been cleared to cross the same runway. The tower controller advised the flight crew of the Airbus that they had not been cleared for takeoff and they discontinued the takeoff.

The safety issue identified as a result of this investigation related to the potential confusion arising from the use of a combined line-up and wait instruction with a departure instruction. Airservices Australia has committed to undertake a review of this procedure.

FACTUAL INFORMATION

Sequence of events

On 17 July 2008, at 2043 Eastern Standard Time[1], an Airbus Industrie A330-300 (Airbus) aircraft, registered RP-C3333, was being operated on a scheduled international passenger service from Sydney, NSW, to Melbourne, Vic. with 13 crew and 163 passengers.

Prior to taxi, the flight crew had briefed for and entered departure information into the aircraft's Flight Management Computer (FMC) for a departure from runway 34 left (34L). The crew were unable to receive an automated Pre-Departure Clearance and therefore contacted air traffic control (ATC) for an airways clearance to Melbourne. About 10 minutes before taxi, they were asked if they would accept a departure from runway 25. The flight crew recalculated the aircraft performance data and acknowledged to ATC that they would accept a departure from runway 25.

The flight crew were concerned with meeting the company's scheduled departure time, which provided little time to brief for the change of runway prior to departing the terminal.

Further briefing of the revised departure procedure was planned to be discussed during the taxi to runway 25. However, the crew did not consider the potential effect of the shortened taxi distance to runway 25 on the time to brief.

The crew reported ready for departure while taxiing on taxiway 'Golf' (Figure 1) to the holding point for runway 25. ATC cleared the crew to line-up and wait, and assigned a heading of 240°M to be flown after takeoff. While lining up, the pilot in command (PIC) asked the copilot for a review of the take-off and departure procedure.

The take-off clearance for the Airbus was being withheld because there was a conflicting Boeing 737 that had been cleared to cross runway 25 at taxiway 'Bravo'. The reason for the delay in the issue of a take-off clearance was not provided to

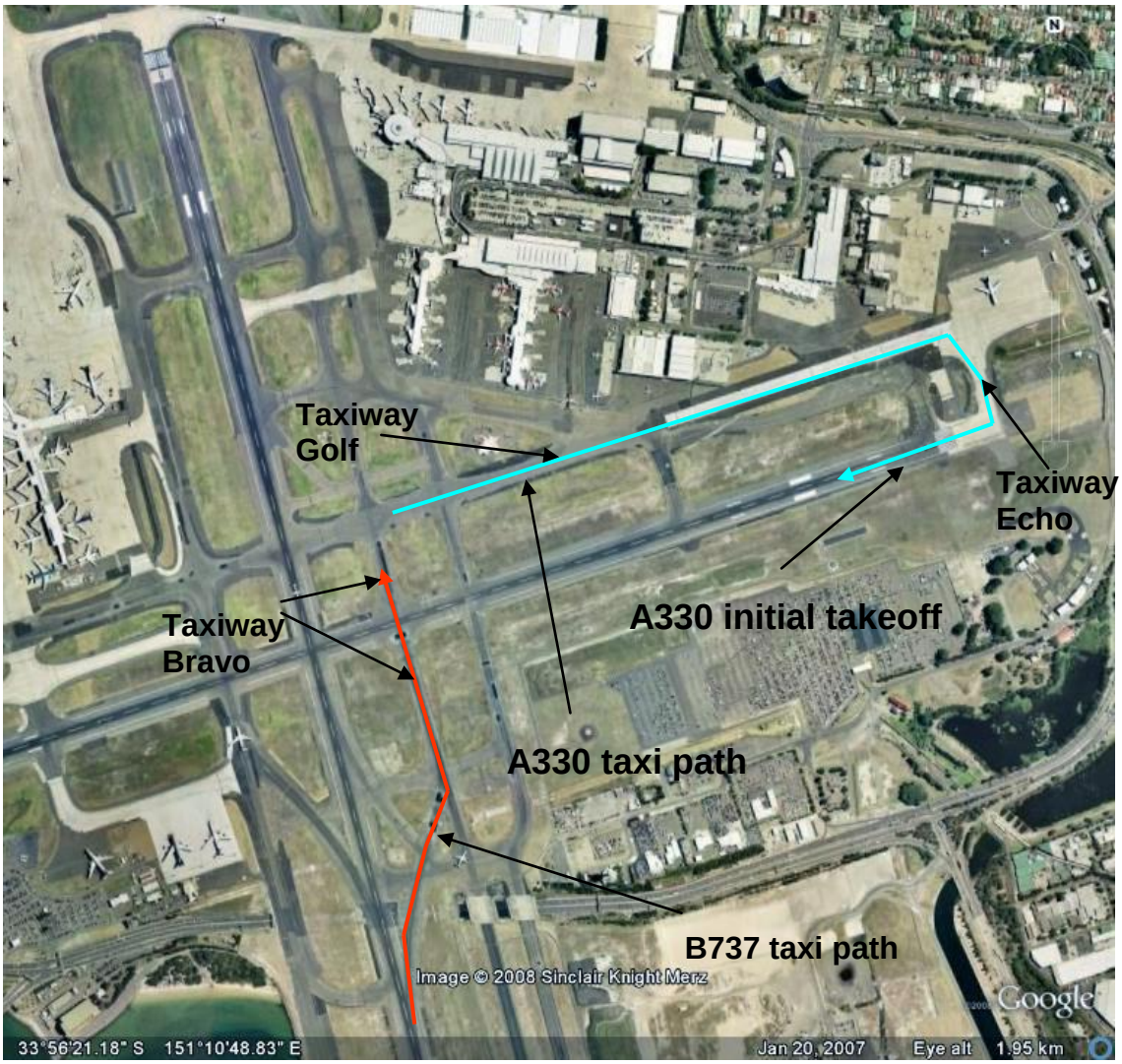
1 The 24-hour clock is used in this report to describe the local time of day, Eastern Standard Time (EST), as particular events occurred. Eastern Standard Time was Coordinated Universal Time (UTC) +10 hours.

the crew of the Airbus. The crew were not aware of this conflicting traffic as it was operating on a separate radio frequency.

The crew read back the clearance to line up and requested clarification of the required heading to turn to after takeoff. They did not read back the requirement to wait on the runway, nor did ATC challenge the fact that the crew did not read back the 'wait' instruction.

The aircraft lined up on runway 25 and commenced the take-off roll without having being issued a take-off clearance by ATC.

Figure 1: Sydney (Kingsford Smith) Airport layout – photo courtesy of Google Earth



A tower controller saw the aircraft moving and instructed the crew to hold position, to which they queried the instruction. The controller then instructed the crew to cancel the takeoff, and the crew stopped the takeoff.

The Sydney ground radar recordings showed that the aircraft reached a maximum speed of 29 kts during the take-off roll.

The aircraft subsequently vacated the runway and returned to the holding point, where it was cleared for takeoff and departed without further incident.

Flight crew information

The aircraft had a flight crew of three. The Captain held an Airline Transport Pilot Licence (ATPL) with 22,993 hours total flying time. During the preceding 90 days, he had completed 217 flying hours. His aviation medical and ratings for the flight were valid at the time of the incident.

The First Officer held an ATPL with 7,725 hours total flying time. During the preceding 90 days, he had completed 200 flying hours. His

aviation medical and ratings for the flight were valid at the time of the incident.

The Second Officer held an ATPL with 3,561 hours total flying time. During the preceding 90 days, he had completed 223 flying hours. His aviation medical and ratings for the flight were valid at the time of the incident.

Air traffic control

The Australian Manual of Air Traffic Services (MATS)[2] required that, when 'aircraft are delayed by the traffic situation', controllers should 'issue traffic information as appropriate' and that they should 'advise the pilot of the nature of the obstruction if it is not apparent'.

The International Civil Aviation Organization (ICAO) Procedures for Air Navigation Services – Air Traffic Management (Doc 4444) specified that the departure instruction may be issued with a take-off clearance. However, it did not provide the option to combine a line-up clearance with a departure instruction.

The MATS[3] permitted the combination of a line-up and wait clearance with a departure instruction.

The MATS[4] noted that:

> [controllers] should only cancel a take-off clearance once an aircraft had commenced the take-off roll in extreme circumstances when an aircraft is in imminent danger.

and that:

> As the decision to reject take-off remains with the pilot, accompany any instruction to cancel take-off with a description of the emergency

To stop a takeoff in emergency situations, controllers were to use the phrase 'stop immediately (repeat aircraft call-sign) stop immediately (reason)[5]'.

2 MATS 12-20-440 and 12-50-515.

3 MATS 12-20-520.

4 MATS 12-20-660.

5 Aeronautical Publication (AIP) GEN 5.14.6.

ANALYSIS

The incident resulted from a combination of, the time pressure experienced by the crew due to accepting the change of departure runway, the phraseologies used by air traffic control (ATC), and the crew's misunderstanding of the ATC instructions.

Air traffic control

ATC instructed the flight crew of the Airbus to hold position and added a departure instruction that was usually included with a take-off clearance. That provided a level of ambiguity for the crew, who were not used to hearing that combination of instructions.

In addition, the inclusion of a reason for the delay in issuing the take-off clearance by ATC may have reduced the likelihood of any misunderstanding by the crew.

As ATC did not challenge the crew for not reading back the 'wait' instruction, a further opportunity to remove any ambiguity or misunderstanding by the crew was missed.

Although the crew had not been issued with a take-off clearance, when ATC observed the aircraft commencing the unauthorised takeoff, the circumstances were not different to those described in the Manual of Air Traffic Services (MATS) relating to cancellation of a take-off clearance once an aircraft has commenced the take-off roll. The controller instructed the crew to hold position rather than instructing them to stop immediately. During that period of high flight deck workload, the crew questioned ATC as to what they had said, at a time when the aircraft should have been stopping.

ATC phraseology should be clear, concise and unambiguous and should reflect international practices and standards where possible, particularly with regard to instructions provided to international aircraft, and in safety critical situations.

Flight crew of the Airbus

The flight crew of the Airbus were concerned with departing on schedule and, combined with the decision to accept a change of runway for departure, provided themselves with little time to brief and comprehend the change to

the departure requirements. Had the crew not self-imposed that pressure, they may have been less distracted due to time constraints and may have correctly comprehended the ATC instructions.

When the crew were instructed to line up and wait on runway 25, and were also assigned a departure heading of 240°, they misunderstood those instructions as a take-off clearance. The confusion was amplified as the crew, when cleared by ATC in other countries, were usually provided with a heading for departure only when cleared for takeoff.

FINDINGS

Context

From the evidence available, the following findings are made with respect to the operational non-compliance involving an Airbus A330 aircraft at Sydney (Kingsford Smith) Airport, NSW on 17 July 2008 and should not be read as apportioning blame or liability to any particular organisation or individual.

Contributing safety factors

- The flight crew of the Airbus accepted the change of departure runway and self-imposed limited time to prepare for departure.
- The crew misunderstood the assigned departure heading as a clearance for departure.
- The use of a combined line-up and wait instruction with a departure instruction, as permitted by the Australian Manual of Air Traffic Services (MATS), can cause confusion with flight crews. *[Safety issue]*
- The flight crew of the Airbus were not advised by air traffic control (ATC) that the reason for the delay to their takeoff was the Boeing 737 aircraft crossing their runway at taxiway Bravo.
- ATC did not challenge the crew's non-readback of the 'wait' instruction when told to line-up and wait on the runway.

Other safety factors

- ATC did not use the term 'stop immediately' to stop the aircraft from continuing the takeoff.

SAFETY ACTION

The safety issues identified during this investigation are listed in the Findings and Safety Actions sections of this report. The Australian Transport Safety Bureau (ATSB) expects that all safety issues identified by the investigation should be addressed by the relevant organisation(s). In addressing those issues, the ATSB prefers to encourage relevant organisation(s) to proactively initiate safety action, rather than to issue formal safety recommendations or safety advisory notices.

All of the responsible organisations for the safety issues identified during this investigation were given a draft report and invited to provide submissions. As part of that process, each organisation was asked to communicate what safety actions, if any, they had carried out or were planning to carry out in relation to each safety issue relevant to their organisation.

Combined line-up and wait and departure instructions

Safety Issue

The use of a combined line-up and wait instruction with a departure instruction, as permitted by the Australian Manual of Air Traffic Services (MATS), can cause confusion with flight crews.

Action taken by Airservices Australia

Airservices Australia advised the ATSB that, as a result of this incident, they intend to review the procedure relating to the use of the line-up and wait instruction, to ensure that MATS is aligned to International Civil Aviation Organization (ICAO) Document (Doc) 4444 as per Civil Aviation Safety Regulation (CASR) 172.090. Any changes to the MATS will be included in the August 2009 MATS amendment.

ATSB assessment of response/action

The action taken by Airservices Australia appears to adequately address the safety issue.

SOURCES AND SUBMISSIONS

Sources

The sources of information for this investigation included:

- the flight crew of the Airbus
- the aircraft operator
- Airservices Australia
- Google Earth for Figure 1.

Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the Transport Safety Investigation Act 2003, the Executive Director may provide a draft report, on a confidential basis, to any person whom the Executive Director considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the Executive Director about the draft report.

A draft of this report was provided to:

- the aircraft operator
- the flight crew of the Airbus
- Airservices Australia
- the Civil Aviation Safety Authority (CASA).

Submissions were received from the aircraft operator, Airservices Australia and CASA. The submissions were reviewed and, where considered appropriate, the text of the report was amended accordingly.