Final Report

BOEING B737, REGISTRATION 9M-MLL
RUNWAY INCURSION AT CHANGI AIRPORT

19 May 2025

TIB/AAI/CAS.246

Transport Safety Investigation Bureau
Ministry of Transport
Singapore

1 April 2026

The Transport Safety Investigation Bureau of Singapore

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ABBREVIATIONS

ASMGCS	Advance Surface Movement Guidance and Control System
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATSP	Air Traffic Service Provider
LT	Local Time
PIC	Pilot-in-Command
RET	Rapid Exit Taxiway
RWC	Runway Controller
SO	Second Officer

SYNOPSIS

On 19 May 2025, a Boeing 737-800 aircraft was cleared to taxi to the holding point on Taxiway T2 (hereinafter referred to as Holding Point T2) for departure on Runway 20C at Singapore Changi Airport. While taxiing, the Runway Controller (RWC) cleared the aircraft to line up on the runway. The RWC switched OFF the red stop bar lights at Holding Point T2 in anticipation of the aircraft's entry onto the runway.

When the aircraft reached Holding Point T2, the flight crew informed the RWC that they needed another two minutes before they could depart. In response, the RWC switched ON the red stop bar lights and informed the flight crew that their line-up clearance was cancelled. The flight crew read back the RWC's instruction incorrectly and continued to taxi the aircraft towards the runway. The RWC instructed the aircraft to hold short of the runway immediately, but the flight crew read back that they were lining up to wait on the runway, and they continued to taxi the aircraft towards the runway. The RWC received a runway incursion alert from the aerodrome's Advance Surface Movement Guidance and Control System.

The RWC subsequently issued a take-off clearance to the aircraft after assessing that it was safe to do so.

The Transport Safety Investigation Bureau of Singapore classified this occurrence as an incident.

AIRCRAFT A DETAILS

Aircraft type	:	B737-800
Operator	:	Malaysia Airlines
Aircraft registration	:	9M-MLL
Date and time of incident	:	19 May 2025, 1653LT
Location of occurrence	:	Singapore Changi Airport
Type of flight	:	Scheduled
Persons on board	:	145

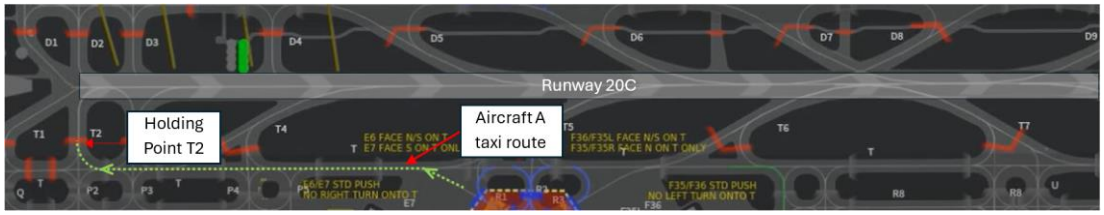
1 FACTUAL INFORMATION

All times used in this report are Singapore Local Time (LT). Singapore Local Time is eight hours ahead of Coordinated Universal Time (UTC).

1.1 History of the flight

1.1.1 On 19 May 2025, a Boeing B737-800 (hereinafter referred to as Aircraft A) was scheduled to depart from Singapore Changi Airport for Kuala Lumpur International Airport at 1635LT. The flight crew comprised a Pilot-in-Command (PIC) and a Second Officer (SO). The PIC was taxiing the aircraft while the SO was communicating with Air Traffic Control (ATC) through the radio.

1.1.2 At about 1649LT, the aircraft was cleared to taxi via Taxiway T and Taxiway T2 to the runway holding point on Taxiway T2 (hereinafter referred to as Holding Point T2) for departure on Runway 20C (see **Figure 1**).



(Source: Civil Aviation Authority of Singapore) (Annotation: TSIB)

Figure 1: Taxi route of Aircraft A

1.1.3 While taxiing along Taxiway T and as instructed by the Ground Movement Controller, the flight crew of Aircraft A switched to the Runway Controller's (RWC) frequency.

1.1.4 At about 1652LT, an arrival aircraft landed on Runway 20C. At this time, Aircraft A was on Taxiway T and approaching Taxiway T2. The RWC asked the flight crew of Aircraft A whether they were ready for departure and the SO replied that they were ready. The RWC then instructed Aircraft A to line up on Runway 20C via Taxiway T2. The SO read back the instruction correctly. Aircraft A then taxied onto Taxiway T2. The RWC switched OFF the red stop bar lights at Holding Point T2 via the Advanced Surface Movement Guidance and Control System (ASMGCS) panel, to facilitate the aircraft taxiing onto the runway without having to stop at Holding Point T2.

1.1.5 Shortly after the SO had read back the RWC's instruction, the flight crew of Aircraft A realised that the cabin crew had yet to report to them that the cabin was ready for departure[1]. The PIC took over the communication with ATC and the SO called the cabin crew via the interphone to check on their readiness for departure. The PIC informed the RWC that they would need another two minutes before they could depart and that they were holding short of the runway[2]. Then both the PIC and the SO heard a chime in the cockpit, activated by the cabin crew to signal to the flight crew that the cabin was ready for departure[3].

1.1.6 Upon hearing that the aircraft would need another two minutes, the RWC switched ON the red stop bar lights at Holding Point T2 and issued to the flight crew of Aircraft A an instruction "line-up clearance cancelled and report when ready". The PIC read back "cleared line-up and wait"[4] and continued to taxi the aircraft towards the runway.

1.1.7 According to the flight crew of Aircraft A, they verified before crossing Holding Point T2, as per their company's requirement, that:

(a) The approach path was clear of any aircraft on short finals[5]; and

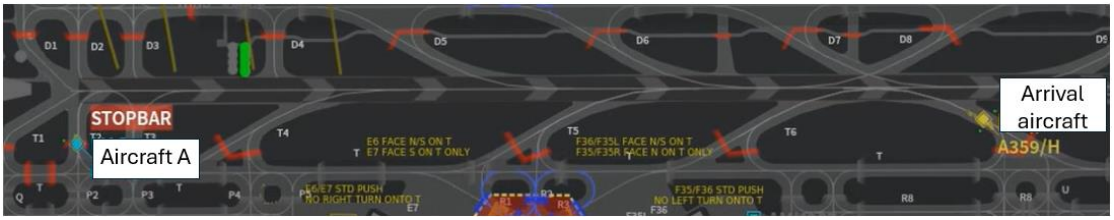
(b) The red stop bar lights were OFF.

1.1.8 The RWC noticed the PIC's incorrect readback and, in response, instructed the PIC to "hold at Holding Point T2". From the recording of the ambient microphone at the control tower, the RWC could be heard saying these words immediately after the PIC's readback. However, a separate audio recording of the Air Traffic Service Provider (ATSP) showed that only the portion "Holding Point T2" was transmitted to Aircraft A. The PIC replied to the RWC with the transmission "we are … ready, lining up and wait Runway 20C" [6] and continued to move towards the runway. The PIC informed the SO[7] that the RWC had

[1] Flight crews need to ensure that the cabin crew has readied the cabin for departure before the aircraft takes off.
[2] Nevertheless, the ASMGCS showed that the aircraft was still taxiing very slowly onto Holding Point T2.
[3] The cabin crew did not speak to the SO on the interphone.
[4] According to the PIC, he could not recall the specific wording transmitted by the RWC during the time the RWC said "line-up clearance cancelled" but believed that the RWC had instructed the aircraft to line up and wait.
[5] There was no aircraft cleared for an approach onto the runway nor was there an aircraft on approach at this time.
[6] According to the PIC, he could not remember what was transmitted by the RWC during the time the RWC said "hold at Holding Point T2" but believed that the RWC had instructed the aircraft to line up and wait.
[7] According to the SO, he did not hear the communications between the PIC and the RWC.

cleared the aircraft to line up and wait on the runway. He then handed over the communication with ATC back to the SO.

1.1.9 At about the same time, the RWC noticed the "STOPBAR" visual alert appearing on the ASMGCS (see **Figure 2**) and understood the alert as an indication that Aircraft A had taxied across the red stop bar lights[8].



(Source: Civil Aviation Authority of Singapore) (Annotation: TSIB)

Figure 2: STOPBAR visual alert on ASMGCS.

1.1.10 The RWC considered instructing Aircraft A to stop and hold at its current position but on second thought felt that there was no need to ask Aircraft A to do so. The RWC reasoned that:

(a) Aircraft A had already crossed the Holding Point T2 which is collocated with the red stop bar lights and a runway incursion had already occurred. Having Aircraft A hold at its current position would not remedy the situation; and

(b) Her plan was to have Aircraft A line up on the runway anyway after the flight crew of Aircraft A had informed her that the aircraft was ready for departure.

1.1.11 At the same time, the RWC noticed that the aircraft that had landed earlier (see paragraph 1.1.4) had turned off from the runway onto Rapid Exit Taxiway (RET) T7 but was taxiing very slowly. The RWC instructed it to turn right onto Taxiway T as she wanted the aircraft to vacate RET T7 quickly. The RWC shared with the investigation team that she was concerned that:

(a) If the arrival aircraft stopped on RET T7 and if Aircraft A initiated the take-off, this would be an unsafe situation as the runway was

[8] The "Runway Incursion" audio alert was also generated but the RWC did not notice the alert.

considered to be occupied so long as the arrival aircraft had not vacated RET T7.

(b) The arrival aircraft might taxi onto an incorrect taxiway if not given further instruction.

1.1.12 Meanwhile, Aircraft A continued to taxi and eventually lined up on Runway 20C. At about 1654LT, and after the arrival aircraft had fully vacated the runway, the RWC cleared Aircraft A for take-off.

1.1.13 The RWC did not inform the flight crew of Aircraft A of the incorrect readback nor of their entering the runway without clearance.

1.2 Injuries to persons

1.2.1 There was no injury to any person.

1.3 Personnel information

1.3.1 PIC

Age	38
Licence type	Air Transport Pilot Licence
Issuing authority	Civil Aviation Authority of Malaysia
Licence validity	Valid till 30 June 2025
Medical certificate	Class 1
Medical certificate validity	Valid till 30 June 2025
Medical operational proviso	Require correction for defective distant vision
Last Base Check date	17 February 2025
Last Line Check date	4 September 2024
Total flying hours	9,624 hours 18 minutes
Aircraft types flown	B734/8/M, A333/2, B772, A388
Total hours on type	2,378 hours 2 minutes
Flying in last 90 days	166 hours 32 minutes
Flying in last 7 days	12 hours 31 minutes
Flying in last 24 hours	5 hours 32 minutes
Duty time in last 48 hours	15 hours 27 minutes
Rest period in last 48 hours	32 hours 33 minutes

1.3.2 SO

Age	29
Licence type	Air Transport Pilot Licence
Issuing authority	Civil Aviation Authority Malaysia
Licence validity	Valid till 31 August 2025
Medical certificate	Class 1
Medical certificate validity	Valid till 31 August 2025
Medical operational proviso	Nil
Last Base Check date	18 March 2025
Last Line Check date	3 May 2025
Total flying hours	2,352 hours 35 minutes
Aircraft types flown	B738
Total hours on type	2,186 hours 3 minutes
Flying in last 90 days	166 hours 39 minutes
Flying in last 7 days	15 hours 20 minutes
Flying in last 24 hours	5 hours 32 minutes
Duty time in last 48 hours	15 hours 27 minute
Rest period in last 48 hours	32 hours 33 minutes

1.3.3 Runway Controller

Age	29
ATC Officer (ATCO) licence validity	Valid till 31 December 2026
Ratings	Since 25 January 2021
Total experience	4 years 3 months
Experience in position manned	4 years 3 months
Duty time in last 48 hours	0
Rest period in last 48 hours	48 hours

1.4 Communication

1.4.1 As mentioned in paragraph 1.1.6, upon hearing that Aircraft A would need another two minutes, the RWC issued, to the flight crew of Aircraft A, an instruction “line-up clearance cancelled and report when ready”. After the incident, the PIC shared with the investigation team that even though he was

more accustomed to instructions in a direct imperative sentence structure[9] phraseology, such as “cancel line-up clearance”, he understood the instruction “line-up clearance cancelled and report when ready”.

1.4.2 According to ICAO Doc 4444 – Procedures for Air Navigation Services – Air Traffic Management and ICAO Doc 9432 – Manual of Radiotelephony, there is no prescribed standard phraseology for the cancellation of a line-up clearance. These ICAO documents further state that “… pilots, ATS personnel and other ground personnel will be expected to use plain language, which should be as clear and concise as possible…”

1.4.3 In the abovementioned ICAO documents, clearances typically adopt a direct imperative sentence structure phraseology. For example, Doc 4444 Section 12.3 on ATC Phraseologies states that the cancellation of a take-off clearance is “Hold position, cancel take-off. I say again, cancel take-off *(reasons)*”.

1.4.4 Prior to this incident, the ATSP did not have guidance for its air traffic control officers (ATCOs) on phraseology for cancelling a line-up clearance. However, according to the ATSP, all ATCOs received training on ICAO standard phraseology, including cancelling of clearances, during the ab initio training and on-the-job training. The phraseology training includes procedures for cancelling clearances and adaptive application of these principles, recognising that ICAO phraseology cannot cover every possible operational scenario. However, the training did not highlight specifically ICAO’s preference of using direct imperative sentence structure phraseology when issuing instructions in plain language for scenarios not covered by ICAO guidance documents.

1.4.5 The RWC shared that she had been using the phraseology “line-up clearance cancelled” without issue. The RWC explained that she did not include the phrase “hold position” in her initial instruction to cancel the line-up clearance as the PIC had mentioned that he was holding short of the runway, and so she assessed that there was no need to repeat the same instruction (see paragraph 1.1.5).

[9] A direct imperative sentence is a grammatical structure used to issue a direct command, request, warning, or instruction to the listener.

1.5 Flight recorders

1.5.1 Aircraft A's flight recorders were not obtained by the Transport Safety Investigation Bureau of Singapore (TSIB) as the aircraft had already departed Singapore when the occurrence was reported to the TSIB.

1.6 Medical and pathological information

1.6.1 Medical and toxicological examinations of the flight crews were not conducted.

1.6.2 According to the RWC, she had been taking the following medication prior to the occurrence:

(a) Dhasedyl Dextromethorphan, for treatment of cough. Dhasedyl Dextromethorphan may cause drowsiness.

(b) Leftose-Lysozyme and Diclofenac, for treatment of inflammation of the throat. Leftose-Lysozyme and Diclofenac do not have drowsiness effect.

1.6.3 The RWC said that she was having a slight cough on the day of the occurrence, but otherwise she was feeling fine. She had consumed Dhasedyl Dextromethorphan on 18 May 2025, about 18 hours before the occurrence.

1.6.4 The RWC underwent a toxicological examination. Dextromethorphan, Promethazine and Pseudoephedrine/Ephedrine were detected in the urine sample[10], consistent with the medication in paragraph 1.6.2 that she had been taking.

[10] Benzydamine was also found in the urine sample, which was consistent with RWC's intake of Leftose-Lysozyme and Diclofenac to treat inflammation of the throat. Benzydamine is not known to cause drowsiness.

2 ANALYSIS

The investigation looked into the following:

(a) PIC's readback

(b) Radiotelephony phraseology for cancellation of line-up clearance

(c) RWC's assessment in not correcting PIC's incorrect readback

(d) RWC's medical examination

2.1 PIC's readback

2.1.1 There were two instances where the PIC read back instructions that were different from the instructions given by the RWC.

(a) As mentioned in paragraph 1.1.6, upon hearing from the PIC that Aircraft A would need another two minutes before being ready for departure, the RWC issued to the flight crew an instruction "line-up clearance cancelled and report when ready". The PIC read back "cleared line-up and wait…"

(b) As mentioned in paragraph 1.1.8, the RWC noticed the PIC's incorrect readback in (a) above and immediately instructed the PIC to "hold at Holding Point T2". The flight crew replied to the RWC with the transmission "we are … ready, lining up and wait Runway 20C".

2.1.2 As regards (a), a direct imperative sentence structure could have been used. This issue will be discussed in paragraph 2.2 below.

2.1.3 As regards (b), as evidenced from the audio recording of the ATSP, only the portion "Holding Point T2" was transmitted to Aircraft A. This was likely due to a simultaneous transmission by two or more parties on the frequency. After the truncated transmission, the PIC read back incorrectly again. The RWC did not address immediately the PIC's incorrect readback and the aircraft continued taxiing towards the runway. This issue will be discussed in paragraph 2.3 below.

2.1.4 During the post-occurrence interview, the PIC stated that he could not recall the exact words of the RWC's instructions in paragraph 2.1.1(a) and (b). As the cockpit voice recorder was not available to the investigation team, it could not

be established what ATC transmission was received in the cockpit at that time, i.e. whether the transmission was clear or was truncated. The flight crew did not indicate to the investigation team that there was any issue with the transmission quality. The recordings obtained from the ATSP did not suggest any issue with the frequency that the RWC and flight crew were using at the time of the incident.

2.1.5 At that time of the incident, the PIC was simultaneously controlling the aircraft and communicating with the RWC. Without cockpit video or audio recording, the investigation team was unable to assess whether the PIC had misheard the RWC's instruction due to increased workload and divided attention.

2.1.6 In both instances of incorrect readback, the PIC had interpreted the RWC's instructions as a clearance to line up on the runway. The initial line-up clearance issued earlier (see paragraph 1.1.4) may have primed the PIC to expect a line-up clearance once the cabin was ready. Thus, when the cabin crew confirmed that the cabin was ready (see paragraph 1.1.5), the PIC's frame of mind could be that the next instruction from the RWC was to line up on the runway. This expectation bias could have led the PIC to interpret the RWC's truncated instructions as a clearance to line up on the runway.

2.2 Radiotelephony phraseology for cancellation of line-up clearance

2.2.1 As mentioned in paragraph 1.1.6, the RWC informed the PIC "line-up clearance cancelled". The PIC could not recall the exact instruction from the RWC during the occurrence. According to the PIC, he was more accustomed to instructions in a direct imperative sentence structure phraseology, such as "cancel line-up clearance".

2.2.2 ICAO guidance documents do not contain specific phraseology examples on cancellation of line-up clearance. However, other examples given in ICAO guidance documents on clearance cancellation use a direct imperative sentence structure phraseology, for example, "cancel take-off clearance".

2.2.3 In July 2025, about two months after the incident, the ATSP published a Radiotelephony Handbook containing recommended standard and commonly used phraseologies. According to the ATSP, the handbook was developed with reference to ICAO documents. The recommended phraseology for cancelling a line-up clearance was "Hold position. Line-up clearance cancelled.

Hold position." The ATSP explained that there was no need to align the phrase "Line-up clearance cancelled" to a direct imperative structure sentence phraseology like "Cancel line-up clearance" as the emphasis of the instruction was on "Hold position" – to convey immediately the action required of the flight crew. Further, the ATSP opined that there was no significant difference between their existing phraseology "Hold position. Line-up clearance cancelled. Hold position" and the direct form, i.e. "Hold position. Cancel line-up. Hold position."

2.2.4 The investigation team noted that the phrase "Hold position" follows a direct imperative sentence structure that is consistent with the principle in ICAO guidance documents.

2.2.5 As stated in ICAO guidance documents, the phraseologies provided …are not intended to be exhaustive, and when circumstances differ, pilots, ATS personnel and other ground personnel will be expected to use plain language, which should be as clear and concise as possible… Since in ICAO documents, clearances typically adopt a direct imperative sentence structure phraseology to reduce ambiguity and minimise risk of misinterpretation, it would be desirable for ATCOs to be made aware that direct imperative sentence structure formulations represent the preferred structural phraseology form and to adopt such structures as far as practicable when issuing instructions in plain language for scenarios not covered in ICAO guidance documents.

2.3 RWC's assessment in not correcting the PIC's incorrect readback

2.3.1 As mentioned in paragraph 1.1.8, the RWC did not address the PIC's second incorrect readback. Hence the aircraft continued to taxi towards the runway.

2.3.2 The RWC reasoned that it was not necessary to instruct Aircraft A to hold position after noticing the "STOPBAR" visual alert on the ASMGCS, given that a runway incursion had already occurred. Further, she had intended to clear Aircraft A to line up on the runway anyway.

2.3.3 Yet at the same time, the RWC was concerned that Aircraft A might initiate take-off while the arrival aircraft had not exited the runway strip. While this concern is a valid one, it was incongruent with her decision of not instructing Aircraft A to hold position. If she was concerned that Aircraft A might initiate a take-off, then all the more she should focus on communicating with Aircraft A

to ensure that Aircraft A would hold its position after crossing the red stop bar lights. It appears that the RWC had determined that her focus should be on clearing the arrival aircraft off the runway. Had the RWC communicated to the flight crew of Aircraft A at the first instance that they had read back incorrectly and held Aircraft A at its current position, the risk of Aircraft A taking off without clearance would have been eliminated even if the arrival aircraft had stopped on RET T7.

2.3.4 The RWC did not correct the PIC's second incorrect readback (see paragraph 2.1.1(b)), and did not instruct Aircraft A to stop and hold at its current position. The investigation team opines that it is paramount for air traffic controllers to always maintain positive control and to ensure that their instructions are clearly understood and complied with by flight crews.

2.4 RWC's medical examination

2.4.1 As mentioned in paragraph 4, remnants of Dextromethorphan, Promethazine and Pseudoephedrine/Ephedrine were detected in the urine sample submitted for the toxicological examination. These remnants were consistent with the medication that the RWC had been taking to treat her cough and inflammation of her throat. Although Dhasedyl Dextromethorphan may cause drowsiness, given that the RWC had consumed Dhasedyl Dextromethorphan about 18 hours before the occurrence, the investigation team opines that it was unlikely that the RWC was suffering from any drowsiness effect at the time of the occurrence.

3 CONCLUSIONS

From the information gathered, the following findings are made. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

3.1 The RWC cleared Aircraft A to line up on Runway 20C and switched OFF the red stop bar lights at Holding Point T2 when Aircraft A reported ready for departure.

3.2 After the flight crew of Aircraft A informed the RWC that they would need another two minutes to prepare the aircraft for departure, the RWC cancelled the line-up clearance and switched the red stop bar lights back ON. The PIC read back incorrectly the RWC's instruction and continued to move towards the runway.

3.3 The RWC instructed Aircraft A to hold position but the instruction was truncated during the transmission. The flight crew read back that they were lining up to wait on the runway.

3.4 The RWC determined that there was no need to ask Aircraft A to hold at its current position, given that it would not remedy the runway incursion situation and her plan was to have Aircraft A line up on the runway anyway.

3.5 The RWC then instructed an arriving aircraft that had landed earlier to turn right onto Taxiway T, so that the aircraft would vacate RET T7 quickly.

3.6 A direct imperative sentence structure for the RWC's instruction would be less prone to misinterpretation.

3.7 The RWC was unlikely to be suffering from any drowsiness effect of the medication she had taken some 18 hours before the occurrence.

4 SAFETY ACTIONS

Arising from discussions with the investigation team, the organisation(s) has/have taken the following safety action.

4.1 The aircraft operator shared the incident with all its flight crews [11] and highlighted the following lessons:

(a) Flight crews shall always listen attentively to ATC instructions. If the communication with ATC is interrupted, flight crews shall seek verification.

(b) On workload management, when flight crews anticipate that several tasks would need to be performed simultaneously, flight crews shall plan, prioritise and schedule the tasks effectively.

4.2 The ATSP shared the incident with all its ATCOs and reminded them of the following:

(a) That instructions to flight crews shall begin with the immediate action required. Any message on or reason for cancellation of a previous instruction shall come later. For instance, when cancelling a line-up clearance, the instruction should be prefixed with an instruction that emphasises the immediate action required of a flight crew, such as “Hold position”.

(b) Importance of correct prioritisation of tasks. In this occurrence, the RWC should have addressed the incorrect readback by Aircraft A, rather than shift her focus to communicate with the arrival aircraft that was vacating the runway.

[11] The operator shared the information by distributing a Flight Crew Memo, sending briefing materials to flight crews’ individual electronic devices, and conducting a presentation during Townhall Meetings.

5 SAFETY RECOMMENDATIONS

A safety recommendation is for the purpose of preventive action and shall in no case create a presumption of blame or liability.

5.1 It is recommended that the Air Traffic Service Provider ensure its ATCOs are aware that direct imperative sentence structure is the preferred form of radiotelephony phraseology and that they adopt such a structure when issuing instructions in plain language for scenarios not covered by ICAO guidance documents. [TSIB Recommendation RA-2026-001]