

FINAL REPORT

PIPER 28A, REGISTRATION 9V-BON

RUNWAY INCURSION

SINGAPORE SELETAR AIRPORT

15 JULY 2010

AIB/AAI/CAS.067

**Air Accident Investigation Bureau of Singapore
Ministry of Transport
Singapore**

14 February 2011

The Air Accident Investigation Bureau of Singapore

The Air Accident Investigation Bureau (AAIB) is the air accidents and incidents investigation authority in Singapore responsible to the Ministry of Transport. Its mission is to promote aviation safety through the conduct of independent and objective investigations into air accidents and incidents.

The AAIB conducts the investigations in accordance with the Singapore Air Navigation (Investigation of Accidents and Incidents) Order 2003 and Annex 13 to the Convention on International Civil Aviation, which governs how member States of the International Civil Aviation Organization (ICAO) conduct aircraft accident investigations internationally.

In carrying out the investigations, the AAIB will adhere to ICAO's stated objective, which is as follows:

"The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability."

CONTENTS

	Page
SYNOPSIS	3
1 FACTUAL INFORMATION	4
1.1 History of the flight	4
1.2 Meteorological information	6
1.3 Communications	6
1.4 Aerodrome information	6
1.5 Additional information	6
2 DISCUSSION	6
3 SAFETY ACTIONS	7
4 SAFETY RECOMMENDATIONS	8

SYNOPSIS

At about 0930 hours (local time) on 15 July 2010, a Cessna 172 (registration 9V-FCl) was holding at the northern end of Runway 03/21 in Singapore Seletar Airport while waiting for clearance from the air traffic control tower to take off on Runway 21. At the same time, a Piper 28A was moving towards the holding area on Taxiway W2 to hold and wait for clearance from the air traffic control tower to enter Runway 03/21.

The Piper mistook a take-off clearance that was meant for the Cessna and taxied onto the runway. However, the Cessna had also commenced its take-off roll. The Tower Controller, controller in the tower, upon noticing the Piper taxiing onto the runway, cancelled the Cessna's take-off clearance. The two aircraft stopped about 100 m away from each other.

The occurrence was classified as an incident by the Air Accident Investigation Bureau of Singapore.

1 FACTUAL INFORMATION

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

1.1 History of the flight

1.1.1 At about 0930 hours on 15 July 2010, a Cessna 172, registration 9V-FCI, was holding at the northern end of Runway 03/21 in Singapore Seletar Airport while waiting for clearance from the air traffic control tower to take off on Runway 21.

1.1.2 At the same time a Piper 28A was moving towards the holding area on Taxiway W2 to hold and wait for clearance from the air traffic control tower to enter Runway 03/21. On board the Piper was a student pilot from a flying school on his twelfth solo flight. His instructor had disembarked a moment ago from the aircraft after a check flight with him. The aircraft was to take off on Runway 21 and the student pilot was expecting to be instructed by the tower to backtrack to the northern end of Runway 03/21 to position for the take-off¹.

1.1.3.1 After the Tower Controller (TC) gave the Cessna the take-off clearance, both the Cessna and the Piper read back the clearance at the same time. However, there was a cross communication², and only the Piper's readback was heard by the TC. Thus, the Cessna started its take-off roll and the Piper also started to move towards the runway.

1.1.4 The TC was aware that the readback was from the Piper. She also noticed that the Piper was moving towards the runway while she was doing a scan of the runway. The TC waited for 10 seconds before cancelling the take-off clearance for the Cessna. The two aircraft stopped about 100 m apart of each other (**Figure 1**). There was no injury to any person and no damage to the aircraft.

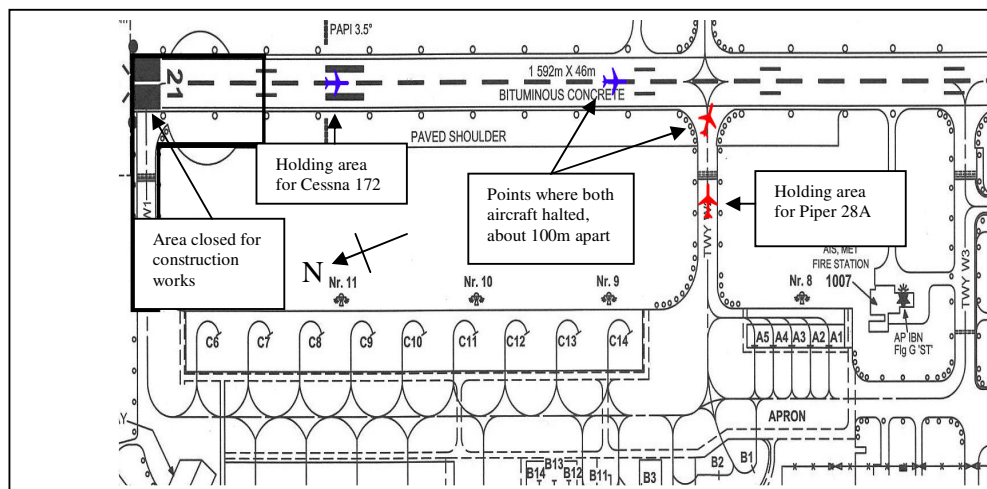


Figure 1. Positions of the Piper and the Cessna (not to scale)

¹ This was in line with the flying school's standard operating procedures.

² Cross communication refers to the simultaneous transmissions of communication by two or more aircraft in which only one of the transmissions can be heard while the others are blocked.

- 1.1.5 Piper's student pilot's account of the incident
 - 1.1.5.1 Before the check flight, the instructor conducted a pre-flight briefing to the student pilot. After the check flight, the student pilot let the instructor disembark at the air traffic control tower before taxiing towards the holding area of Taxiway W2. He used Radio 2³ for a radio check with the instructor, after which he returned to Radio 1. He then informed Ground Control on Radio 1 that he would be switching to tower frequency at 118.45 kHz.
 - 1.1.5.2 The student pilot called the tower for clearance but was told to hold at W2. After reading back the instruction to hold at W2, he heard the tower issuing a take-off clearance. He assumed that the clearance was for him, although he found it odd that the tower did not ask him to backtrack to the northern end of Runway 03/21 to position for take-off on Runway 21.
 - 1.1.5.3 Anyway, the student pilot read back the take-off clearance and included his callsign (9V-BON) in his readback. He was expecting to be corrected if the clearance was not meant for him. The student pilot waited but did not hear any correction or further instruction from the tower. He then proceeded with caution. While he was taxiing along Taxiway W2, he saw an aircraft on the runway and applied brakes immediately. Soon after, he heard the tower cancelling the take-off clearance. When the Piper came to a stop, the aircraft's nose had just crossed into the runway area. The student pilot was subsequently asked to vacate the runway via Taxiway W3.
 - 1.1.5.4 The student pilot was aware that he had to request the tower to repeat the instruction if he was doubtful of the instruction. The student pilot told the investigators that, as it was a hot day, he just wished to take off as soon as possible.
- 1.1.6 Tower Controller's account of the incident
 - 1.1.6.1 The TC was scanning the runway when she heard the readback for the take-off clearance from the Piper. The TC then saw the Piper moving towards the runway.
 - 1.1.6.2 To respond to the situation, the TC had two options: (1) to issue an instruction to correct the Piper's student pilot, and (2) to cancel the take-off clearance for the Cessna. The TC opted for the latter. The TC told the investigators that, based on her experience, issuing an urgent take-off clearance cancellation for the Cessna would be more effective, as the student pilot might panic under the circumstances, and thus not respond immediately to her correction instruction.
 - 1.1.6.3 After both aircraft had stopped, the TC instructed the Piper to vacate the runway before allowing the Cessna to proceed with the take-off.

³ Refer to paragraph 1.3.2 for a description of Radio 1 and Radio 2.

1.2 **Meteorological information**

1.2.1 At the time of the incident, the weather was clear and there was no precipitation.

1.3 **Communications**

1.3.1 The radio communications between the pilots, ground controller and TC were normal.

1.3.2 The student pilot in the Piper used two radios. Each radio had two sets of adjustable frequencies. Radio 1 was the primary radio for communications, with one primary frequency and one standby frequency. Radio 2 was used for monitoring purposes and as a backup radio, with one primary frequency and one standby frequency. Both radios had the capability to transmit. The pilot had to operate a switch to select the desired radio for transmission.

1.4 **Aerodrome information**

1.4.1 Runway 03/21 was being extended from 1,500 m to 1,600 m. The Runway 21 threshold (northern end of Runway 03/21) had been displaced southwards by 137 m. Taxiway W1, which led to the Runway 21 threshold, was closed and aircraft that needed to take off on Runway 21 had to enter the runway from other taxiways and backtrack to the threshold.

1.4.2 The terrain was such that, from the holding area of Taxiway W2, it was not possible to see if there was any aircraft at the Runway 21 threshold.

1.5 **Additional information**

1.5.1 The air traffic control authority at Seletar Airport had an Air Traffic Services Manual (ATSM). Section 4.11.4 of ATSM Communications Procedure 1-13 states:

The controller shall listen to the readback to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew, and shall take immediate action to correct any discrepancies revealed by the readback

2 **DISCUSSION**

2.1 The Piper student pilot

2.1.1 The student pilot heard a take-off clearance but found it odd that the tower did not ask him to backtrack to the northern end of Runway 03/21 to position for take-off on Runway 21. As the weather was hot and he

wished to take off as soon as possible, he read back the clearance with his callsign and waited. He was expecting the TC to correct him if the clearance was not meant for him.

- 2.1.2 It is not a safe practice for a pilot to respond to a clearance when he is doubtful of the instruction for clearance, in the hope that he will be corrected if indeed the clearance is not meant for him. A safe system cannot allow for such an approach. If the pilot is in doubt, he shall seek clarification to ensure that he understands the air traffic control instructions clearly.
- 2.1.3 The student pilot did notice that the take-off clearance was not in line with his flying school's standard operating procedures as it did not include an instruction to backtrack to the Runway 21 threshold. This should have reinforced his doubt. Unfortunately he did not opt to seek clarification from the TC.
- 2.1.4 Also, as there is no line of sight between the holding area at Taxiway W2 and the Runway 21 threshold, pilots should be extra cautious and pay attention to the radio communications between the other aircraft and the air traffic controllers. It is absolutely important that pilots maintain situation awareness as to whether there is any aircraft on the runway, in order to avoid a runway incursion situation.

2.2 The Tower Controller

- 2.2.1 Both the aircraft responded to the take-off clearance at the same time, resulting in a cross communication. Even though the TC was scanning the runway, she was aware that the readback came from the Piper and not the Cessna. Given the circumstances, it seems that it should have been possible for her to correct the Piper student pilot or cancel the take-off clearance immediately instead of waiting for 10 seconds. The head of the air traffic control authority at Seletar Airport was also of the opinion that the TC could have taken immediate action to correct the readback discrepancy.
- 2.2.2 The ATSM had an instruction that a readback discrepancy is to be corrected immediately. One might argue that a situation in which one aircraft is rolling for take-off and another aircraft entering the runway constitutes an exceptional situation and the air traffic controllers concerned should be allowed to exercise discretion in resolving the problem. However, the air traffic control authority has affirmed that controllers are required to comply with the requirement in Section 4.11.4 of ATSM Communications Procedure 1-13.

3 SAFETY ACTIONS

- 3.1 The flying school has since required all solo student pilots to hold one aircraft length behind the stop line at a taxiway holding area so that the student pilots will have extra braking distance to stop their aircraft in the

event of an emergency.

- 3.2 The air traffic control authority has since reiterated to all air traffic controllers and trainees the need to correct a wrong readback immediately.

4 **SAFETY RECOMMENDATIONS**

It is recommended that:

- 4.1 The flying school concerned remind its students that they should request for air traffic controllers to clarify any instruction if they are unclear about the instruction or if the instruction does not accord with normal operating procedures and that they should not rush to take off even if the weather is not favourable. [AAIB Recommendation R-2011-001]
- 4.2 The flying school concerned remind its students that, where there is no line of sight between a taxiway holding area and a runway threshold, they should be extra cautious before taxiing towards the runway and be sure that a take-off clearance is really meant for them.
[AAIB Recommendation R-2011-002]