

**FINAL REPORT OF RUNWAY INCURSION OF  
SINGAPORE AIRLINES, B737-8 AIRCRAFT  
(9V-MBG) THAT OCCURRED  
AT YANGON INTERNATIONAL AIRPORT,  
ON 25<sup>th</sup> OCTOBER, 2023**



**MYANMAR TRANSPORT SAFETY BRANCH  
MINISTRY OF TRANSPORT AND COMMUNICATIONS**

**25 April 2024**

# CONTENTS

	<b>Page</b>
<b>MYANMAR TRANSPORT SAFETY BRANCH (MTSB)</b>	<b>1</b>
<b>GLOSSARY OF ABBREVIATIONS</b>	<b>2</b>
<b>SYNOPSIS</b>	<b>3</b>
<b>AIRCRAFT DETAILS</b>	<b>3</b>
<b>1        <b>FACTUAL INFORMATION</b></b>	<b>3</b>
1.1    History of Flight	<b>4</b>
1.2    Injuries to persons	<b>5</b>
1.3    Damage to aircraft	<b>5</b>
1.4    Personnel information	<b>6-7</b>
1.5    Aircraft Information	<b>7-8</b>
1.6    Meteorological Information	<b>8</b>
1.7    Aid to Navigation	<b>8</b>
1.8    Communication	<b>8</b>
1.9    Aerodrome Information	<b>8-9</b>
1.10   Flight Recorders	<b>10</b>
1.11   ATC Recorded Information	<b>10</b>
1.12   Organizational and Management Information	<b>10</b>
1.13   Additional Information	<b>11-12</b>
<b>2        <b>ANALYSIS</b></b>	<b>13</b>
2.1    Cause of the runway incursion	<b>13</b>
2.2    Standard operating procedures of Singapore Airlines	<b>13-16</b>
2.3    Take-Off Clearance by ATC	<b>17</b>
2.4    Procedures of Runway Incursion or Obstructed Runway	<b>18-19</b>
2.5    Usage of Standard Phraseology by ATC	<b>19-20</b>
<b>3        <b>CONCLUSIONS</b></b>	<b>21</b>
3.1    Findings	<b>21</b>
<b>4        <b>SAFETY RECOMMENDATIONS</b></b>	<b>21-22</b>
<b>5        <b>SAFETY ACTIONS</b></b>	<b>22</b>

## **Myanmar Transport Safety Branch (MTSB)**

The Myanmar Transport Safety Branch (MTSB) is one of the divisions of Minister's office under the Ministry of Transport and Communications. It is an independent investigation authority, which is responsible for the investigation of air, marine and rail transport accidents and incidents in Myanmar. Its mission is to promote transport safety through the conduct of independent investigations into air, marine and rail accidents and incidents.

For aviation related investigations, the MTSB conducts investigations in accordance with Myanmar Aircraft Act and Myanmar Aircraft Accident and Incident Investigation Rules and Annex-13 to the Convention on International Civil Aviation.

In carrying out the investigations, the MTSB adheres 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."***

Accordingly, it is inappropriate that MTSB reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

**GLOSSARY OF ABBREVIATIONS**

ATC	Air Traffic Control
COP	Crew Operating Pattern
CUP	Command Upgrade Program
DCA	Department of Civil Aviation
DME	Distance measuring equipment
IFR	Instrument flight rules
LT	Local time
MTSB	Myanmar Transport Safety Branch
METAR	Meteorological aerodrome report
NOSIG	No significant change
NM	Nautical mile
PCN	Pavement classification number
PF	Pilot flying
PIC	Pilot in command
PM	Pilot monitoring
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
RGN GND	Rangoon ATC Ground
RGN TWR	Rangoon ATC Tower
RWY HDG	Runway heading
SFO	Senior first officer
UTC	Coordinated universal time
VFR	Visual flight rules

# **FINAL REPORT OF RUNWAY INCURSION OF SINGAPORE AIRLINES, B737-8 AIRCRAFT (9V-MBG) THAT OCCURRED AT YANGON INTERNATIONAL AIRPORT, ON 25<sup>th</sup> OCTOBER, 2023**

## **SYNOPSIS**

On 25<sup>th</sup> October 2023, at 11:27 local time (LT), a Boeing 737-8 aircraft from Singapore Airlines, registration number (9V-MBG) operated flight number SIA 761 was scheduled to depart Yangon International Airport for Singapore Changi Airport.

While the aircraft was approaching the holding point of Exit Taxiway A6 for the Runway (21), ATC gave a take-off clearance for the flight and informed that there was an arriving aircraft on approach at 7 NM to touchdown. One minute later, ATC instructed SIA 761 to hold at the present position but the aircraft had already passed the stop bar of Exit Taxiway A6.

SIA 761 was stopped beyond the stop bar (Runway Holding Position Marking) of Exit Taxiway A6 and resulted in a runway incursion. On board the aircraft were the Pilot-In-Command (PIC), Co-Pilot (SFO), Safety Pilot (SFO), 3 cabin crew and 123 passengers. Myanmar Transport Safety Branch (MTSB) was informed of the incident by Transport Safety Investigation Bureau of Singapore (TSIB) on 30<sup>th</sup> October 2023 and classified this occurrence as an incident. There were no injuries and damage to aircraft in this occurrence.

## **AIRCRAFT DETAILS**

Registered owner and operator	: Singapore Airlines
Aircraft type	: Boeing 737-8
Nationality	: Singaporean
Registration	: 9V-MBG
Place of Occurrence	: Yangon International Airport (VYYY), N 16°55'23", E 96°08'42"
Date & Time	: 25 <sup>th</sup> October 2023 at 11:27 LT
Type of operation	: Scheduled passenger and training flight
Phase of operation	: Taxiing to take-off
Persons on Board	: Six Air Crew and one hundred twenty-three Passengers

## **1 FACTUAL INFORMATION**

All times used in this report are Myanmar local times. Myanmar local time is six hours and thirty minutes ahead of Coordinated Universal Time (UTC).

## 1.1 History of the flight

On 25<sup>th</sup> October 2023, a Boeing 737-8 aircraft was scheduled to depart Yangon International Airport (RGN) for Singapore Changi Airport (SIN) as Flight SIA 761. The flight crew comprised a Pilot-In-Command (PIC), a Co-pilot (SFO), a Safety pilot (SFO) and three cabin crew.

The Crew Operating Pattern (COP) was a Command Upgrade Program (CUP) Left Hand Seat training flight. For this sector RGN-SIN, the Captain, PIC was the pilot flying from Right Hand Seat, while Senior First Officer, the Co-pilot, was operating as pilot monitoring from Left Hand Seat and another Senior First Officer was in the Observer Seat as the Safety pilot.

SIA 761 started taxi-out with 123 passengers on board at 11:21 (LT). The plane was approaching the holding point of Exit Taxiway A6 for the Runway (21) in accordance with the taxi instructions by ATC. After the BEFORE TAKE-OFF checklist had completed, the pilot monitoring reported to ATC that the plane was ready for take-off at 11:26 (LT). ATC gave a take-off clearance for the flight and informed that there was an arriving aircraft on approach at 7 NM to touchdown. The red stop bar lights were switched OFF.

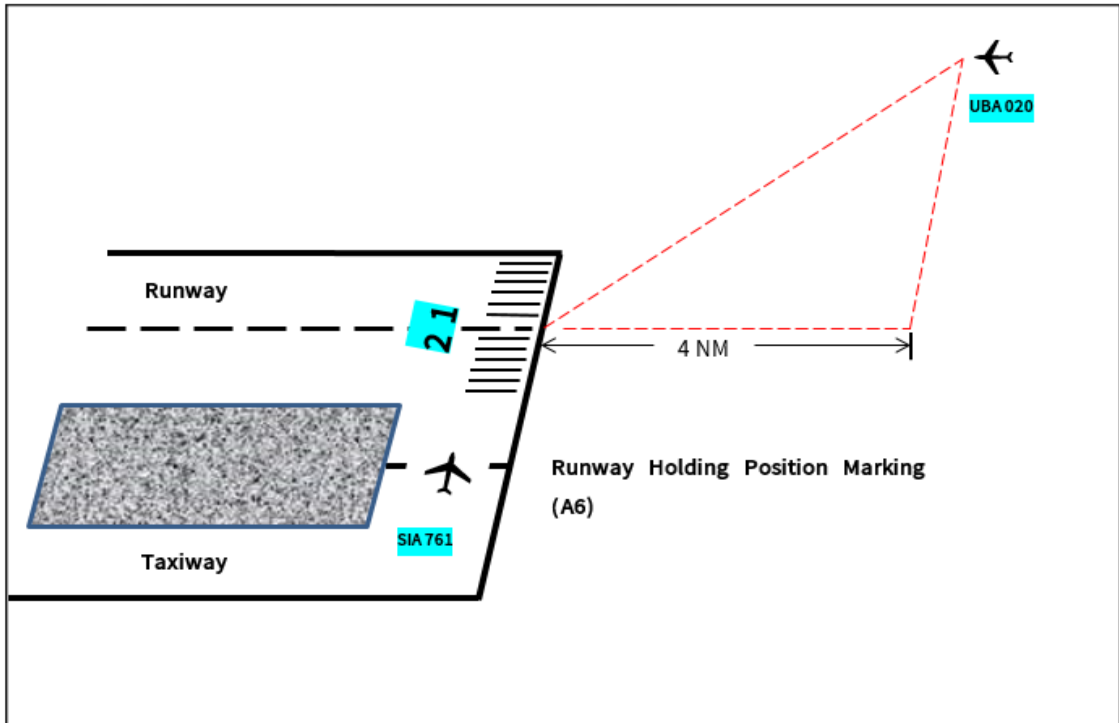
The pilot flying confirmed that the runway and approach were clear, and continued taxi for take-off. One minute later, ATC instructed SIA 761 to hold at present position. Therefore, the pilot flying stopped the aircraft immediately, but the aircraft nose was already beyond the stop bar of Exit Taxiway A6. Although the pilot monitoring reported to ATC that the aircraft had already passed the stop bar (Runway Holding Position Marking), ATC instructed again the aircraft to hold at the present position.

This resulted in a runway incursion. No one was injured in this incident. The pilot flying estimated that the aircraft nose might be up to 2 meter beyond the stop bar by the time the aircraft came to a stop. (See Figure 1 and 2)

Five seconds later, ATC instructed the Myanmar National Airlines, flight number UBA 020 that the runway was clear to land. Subsequently, ATC instructed SIA 761 to line up the Runway (21) and then gave a take-off clearance again for the flight. There was no further incident.



**Figure (1) Layout of SIA 761 Incident Site**



**Figure (2) Sketch Layout of Runway Incursion**

**1.2 Injuries to Persons**

There was no injury to any person on board SIA 761.

### 1.3 Damage to Aircraft

SIA 761 did not sustain any damage.

### 1.4 Personnel Information

#### 1.4.1 Pilot-In-Command (Captain)

Age : 48 years  
License : Airline Transport Pilot License  
License issued date : 16 May 2017  
Total hours : 14423 hrs  
On type : 2143 hrs  
Medical expire : 31 May 2024  
Line check date : 13 October 2023  
Type rating check date : 30 January 2023  
Instructor rating : 29 November 2022  
Instrument rating : 30 January 2023  
Last 90 days : 55:13 hrs  
Last 30 days : 27:29 hrs  
Last 24 hours : Nil  
Rest before duty : > 12 hrs

#### 1.4.2 Co-Pilot (Senior First Officer)

Age : 49 years  
License : Airline Transport Pilot License  
License issued date : 20 April 2023  
Total hours : 10629 hrs  
On type : 245 hrs  
Medical expire : 30 November 2024  
Line Check date : 25 October 2023  
Type rating check date : 6 March 2023  
Instructor rating : Nil  
Instrument rating : 15 October 2023  
Last 90 days : 80:24 hrs  
Last 30 days : 18:31 hrs  
Last 24 hours : Nil  
Rest before duty : > 8 hrs

#### 1.4.3 Safety Pilot (Senior First Officer)

Age : 45 years



License : Airline Transport Pilot License  
 License issued date : 21 September 2017  
 Total hours : 9987 hrs  
 On type : 61:58 hrs  
 Medical expire : 30 September 2024  
 Line check date : 18 September 2023  
 Type rating check date : 18 September 2023  
 Instructor rating : Nil  
 Instrument rating : 5 September 2023  
 Last 90 days : 61:58 hrs  
 Last 30 days : 51:33 hrs  
 Last 24 hours : Nil  
 Rest before duty : > 10 hrs

#### **1.4.4 Air Traffic Controller (Manager)**

Age : 39 years  
 Working Experience : 18 years  
 Type of License : Aerodrome Control and Approach Control Procedural  
 Last proficiency check : 31 July 2022

#### **1.4.5 Air Traffic Controller (ATCO II)**

Age : 35 years  
 Working Experience : 8 years  
 Type of License : Aerodrome Control  
 Last proficiency check : 5 March 2022

#### **1.4.6 Air Traffic Controller (ATCO II) (Junior)**

Age : 27 years  
 Working Experience : 3.9 years  
 Type of License : Under processing  
 Last proficiency check : Nil

### **1.5 Aircraft information**

Manufacture : The Boeing Company  
 Type : B737-8  
 Serial number : 44251  
 Date of Manufacture : 21 November 2021

Total Airframe hours : 5204.81 hrs  
Certificate of Registration : 9V-MBG  
Certificate of Airworthiness : AWC.1026  
Last Time Check : 25 October 2023

There were no technical issues with SIA 761 reported since the start of these sectors.

## **1.6 Meteorological Information**

The METAR weather reported at Yangon International Airport on 25<sup>th</sup> October 2023 at 11:00 (LT) was wind speed 3 knots from 100 degrees, visibility 7000 meters, scattered clouds at 1800 feet to 11000 feet, temperature was 31°C, dew point was 25°C and QNH 1013 hPa and no significant change (NOSIG) is expected to the reported conditions within the next 2 hours. The weather condition was not a factor in this incident.

## **1.7 Aid to Navigation**

Navigation facilities equipped in Yangon International Airport were normal and which are not related to this incident.

## **1.8 Communication**

There were no reported communication issues between SIA 761 and ATC. From the time SIA 761 switched to the tower radio frequency until the runway incursion, there were no radio transmissions between the ATC and any other aircraft over the tower radio frequency.

## **1.9 Aerodrome Information**

Yangon International Airport has one main Runway 03/21 with a length of 11200 feet at an elevation of 110 feet above mean sea level and is certified for both VFR and IFR flight. Runway strength (PCN) is 56/R/C/X/T and the airport has an Air Traffic Control (ATC) Tower, controlling Class B airspace with radar surveillance facilities.

All taxiways leading into the runway have each in place a holding point. The holding point has the following features as visual aids to prevent runway incursions:

- (a) There is runway holding position marking on the ground.
- (b) There are red stop bar lights embedded on the ground at the runway holding position marking.
- (c) There are runway guard lights on each side of the taxiway.
- (d) There is enhanced taxiway centerline marking to visually warn flight crew that the aircraft is approaching the runway holding position marking and should be prepared to stop unless the aircraft has been cleared to enter the runway.

In this incident, the red stop bar lights and runway guard lights were serviceable and all the markings at the holding position were visible. There were no reported faults as regards the red stop bar lights.



**Figure (3) Runway Holding Position Marking and Stop bar Lights of Taxiway A6**



**Figure (4) Taxiway Centerline of Exit Taxiway A6**

## **1.10 Flight Recorders**

The flight data recorder was available for readout and contained information pertaining to the occurrence but it did not give much relevant evidence. The recordings in the cockpit voice recorder pertaining to the occurrence were overwritten.

## **1.11 ATC Recorded Information**

The investigation team inspected the relevant ATC recordings:

- (a) According to the ATC transcript, at 11:21:37 (LT) the pilot requested permission to taxi-out and the air traffic controller granted it.
- (b) Then at 11:26:05 (LT) when the pilot reported that the plane was ready for take-off, the air traffic controller gave a take-off clearance for the flight and informed that there was an arriving aircraft on approach at 7 NM to touchdown.
- (c) At 11:27:03 (LT), the air traffic controller instructed SIA 761 to hold at the present position, and the pilot said that the plane had already passed the holding point (stop bar), but the air traffic controller instructed again it to hold at the present position.
- (d) Then at 11:27:19 (LT), the air traffic controller instructed the Myanmar National Airlines, (UBA 020) that the runway was clear to land.
- (e) Subsequently, at 11:29:39 (LT) the air traffic controller instructed SIA 761 to line up the Runway (21) and gave a take-off clearance for the flight again.

## **1.12 Organizational and Management Information**

### **1.12.1 Singapore Airlines**

Singapore Airlines is the flag carrier of Singapore with its hub at Changi Airport. It was established in 1972 and based in Singapore.

### **1.12.2 Air Traffic Control**

Department of Civil Aviation (DCA) is the air traffic control service provider at Yangon International Airport. The Duty Tower Air Traffic Controller Team was not aware of and did not inform this incident to Myanmar Transport Safety Branch (MTSB).

## **1.13 Additional Information**

### **1.13.1 Testimony of an Air Traffic Controller (Manager)**

He served as Tower In-Charge on 25<sup>th</sup> October 2023. On that day, he had heard that a Boeing 737-8, registration number (9V-MBG), flight number SIA 761 from Singapore Airlines was reported by e-mail to the relevant authorities that there was a runway incursion incident. At the time of the incident, he was controlling the aircraft in the Approach Control position.

At that time, he heard the Tower Controller said that SIA 761 was not ready for take-off. When he looked at the top of Runway 21, the SIA 761 started to pass the holding point slowly. At that time, the plane that was going to land was a Boeing 737-800 from Myanmar National Airlines and it crossed over 5 NM to touchdown and approached 4 NM to touchdown.

Therefore, as the SIA-761 was not ready for take-off, he told his junior to hold the SIA 761. Tower Controller also said: "SIA 761, hold at present position" and SIA 761 responded: "We already passed holding point". When the tower controller said: "Hold at present position" again, the SIA 761 flight stopped.

As the place where the plane stopped was at the Hold Short of Runway (21) position, he concluded that there was no runway incursion. Landing aircraft UBA 020 (Boeing 737) also landed at 11:28 (LT) and did not report any complaints to Tower Control until it reached parking.

### **1.13.2 Testimony of an Air Traffic Controller (ATCO II)**

She was working as Tower Controller (Senior) on 25<sup>th</sup> October 2023. A Boeing 737-8, Registration number (9V-MBG) from Singapore Airlines, Call sign - SIA 761 (VYYY-WSSS) encountered a runway incursion during the take-off clearance at Exit Taxiway A6 of the Departure Runway 21.

When SIA 761, REG (9V-MBG) was approaching the holding point of Exit Taxiway A6 for the runway 21 to take-off from Yangon International Airport to Singapore Changi Airport, Singapore Airlines (SIA 761) reported that it was ready to take-off at over the Taxiway A5 of the Main Taxiway A.

The Tower Controller (Junior) told the aircraft to continue the taxi. At that time, SIA 761 was between the top of Main Taxiway A and Exit Taxiway A6 and the landing aircraft UBA 020, B738, (VTBS-VYYY) was at 9 NM to touch down. As SIA 761 was ready to take-off, she told her junior to give take-off clearance. In giving the take-off clearance to SIA 761, she told her junior to give the landing traffic information by 7 NM to touchdown, as SIA 761 wanted Immediate Departure.

As SIA 761 slowed down when it arrived at the Taxiway A6 Holding Point, when the landing aircraft was leaving 6 DME to touch down, Approach In- Charge told her to hold the SIA 761 at the present position for safety. Therefore, she told her junior to hold the SIA 761 at the Holding Point of Exit Taxiway A6. After that, the Tower Controller (Junior) gave landing clearance to Myanmar National Airlines, UBA 020.

### **1.13.3 Testimony of an Air Traffic Controller (ATCO II) (Junior)**

On 25<sup>th</sup> October 2023, she was on duty at the Tower Position until UTC time (04:00-06:00) and her senior was a watch duty. The weather was also good. A Boeing 737-8, Registration number (9V-MBG) from Singapore Airlines, Call sign - SIA 761 (VYYY- WSSS) encountered a runway incursion during the take-off clearance at Exit Taxiway A6 of the Departure Runway 21.

As the SIA 761 was to fly from Yangon International Airport to Singapore Changi Airport and it would take-off from Runway 21, she instructed it to taxi to Holding Point of Exit Taxiway A6.

After that, as there was a landing aircraft from Myanmar National Airlines, Boeing 738, Call sign-UBA 020, she asked her senior how to provide a separation between take-off and landing aircraft and her senior advised that SIA 761 would take-off first.

SIA 761 was over Taxiway A5 and it reported that it was ready for take-off. Therefore, she instructed the aircraft to continue the taxi. At that time, SIA 761 was between the top of Main Taxiway A and Exit Taxiway A6 and the landing aircraft UBA 020, B738, (VTBS-VYYY) was at 9 NM to touch down.

After that, her senior instructed her to give a take-off clearance and landing traffic information by 7 NM to touchdown to the SIA 761. Therefore, she gave a take-off clearance and landing traffic information to the SIA 761 as her senior instructions.

When the SIA 761 arrived at the Taxiway A6 Holding Point, the landing traffic was approaching 6 DME to touchdown. Therefore, as the Approach In-Charge instructed to hold the SIA 761, her senior told the SIA 761 to hold at the Holding Point of Taxiway A6. After that, she gave a Landing Clearance to Myanmar National Airlines, UBA 020. Subsequently, SIA 761 was then given a smooth take-off clearance.

## 2 ANALYSIS

The analysis by the investigation team has focused on the following areas:

- a) Cause of the runway incursion
- b) Standard operating procedures of Singapore Airlines
- c) Take-Off Clearance by ATC
- d) Procedures of Runway Incursion or Obstructed Runway
- e) Usage of Standard Phraseology by ATC

### 2.1 Cause of the runway incursion

When the SIA 761 pilot reported that the plane was ready for take-off, the arriving aircraft, UBA 020, was at 9 NM to touchdown. Therefore, the tower controller gave the SIA 761 a take-off clearance early because she presumed it would be clear for take-off. When the arriving aircraft, UBA 020, approached 4 NM, the SIA 761 had already passed about 2 meter of the holding point. Therefore, the air traffic controller instructed the SIA 761 to stop at the present position because it was too late to take-off clearly.

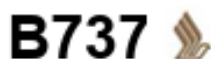
It is scrutinized that this incident occurred due to the air traffic controller's requirement to provide a safe separation between take-off and landing aircraft based on the type and performance of aircraft and non-compliance with the procedures of Runway Incursion or Obstructed Runway.

### 2.2 Standard operating procedures of Singapore Airlines

According to the excerpt of Standard Operating Procedures from Singapore Airlines, serial number 5 to 9 are performed only when flight crew receives line up or take-off clearance. Further, serial number 10 and 11 are performed only when flight crew receives take-off clearance. Therefore, the flight crew needs to report that they are 'ready' before completing the Before Take-off checklist. As mentioned in the crews' statements, after receiving take-off clearance, they completed the Before Take-off Checklist before turning onto A6.

The flight crew reporting 'ready' while taxiing is a way of ensuring smooth and efficient traffic movement, as long as the Checklist is fully completed prior to entering the runway. Even if the aircraft came to a complete stop, the flight crew needs to report 'ready' before ATC will issue the line-up or take-off clearance.

Even if pilots report 'ready', ATC has the prerogative to tell the aircraft to hold on the taxiway/holding point if the runway is not ready or available for the flight.



Normal Procedures /  
Supplementary Procedure

## NORMAL PROCEDURES

OPERATION  
Preliminary Preflight Procedure

Upon clearance to lineup/takeoff,

5. **FMC and Departure Runway** ..... R/W\_\_\_ Identified (BOTH)
  - a. Before entering the assigned runway, verify that:
    - The assigned runway is positively identified by reference to its runway designation sign or runway designation.
    - Crosscheck that the assigned runway is displayed on the ND.

The following procedures are to be accomplished by the PM after clearance is obtained to enter the active runway for takeoff and when initiated by the PF.
6. **Cabin announcement** ..... Complete
  - Announce "Cabin Crew to Your Takeoff Stations" on PA.
7. **POSITION Lights** .....STROBE & STEADY
  - Use other lights as required.
8. **Transponder**..... TA/RA
  - Select the transponder mode selector to TA/RA.
  - Verify that the TFC mode annunciation is displayed on both NDs.
9. **LANDING Lights**.....ON
  - LANDING light switches – ON

When cleared for takeoff,

10. **Takeoff Clearance** .....Obtained (BOTH)
 

NOTE: If instructed to maintain runway heading on takeoff, disarm LNAV before takeoff and select HDG SEL only after passing 400ft AAL. Drift correction shall not be applied.
11. **BEFORE TAKEOFF Checklist** .....Complete



**Task Sharing Table – Before Takeoff**

BEFORE TAKEOFF	
PF	PM
If flight control checks are carried out during taxi	
Check rudder for full freedom of movement, full deflection and pedals return to centre.	Check ailerons and elevators for full freedom of movement, full deflection and controls return to centre.
Parking brake – Release.	TAXI light – ON Record Taxi Out time.
Taxi to assigned runway.	Monitor taxi route to assigned runway with reference to Taxi Charts.
Verify departure runway, ATC clearance, HDG and clearance limit altitude set on MCP window.	
Verify correct takeoff data set.	
PM to set the weather radar display for both ND as needed. Set the terrain display as needed.	
Verify cabin ready message is obtained.	
Call "Before Takeoff Checklist to the Cleared for Lineup / Takeoff Line"	
Crosscheck selected flap in FMC against actual flap position in the Flap Position Indicator and verify the LE FLAPS EXT green light is illuminated.	
	Accomplish and Announce "Before Takeoff Checklist to the Cleared for Lineup / Takeoff Line Complete".

BEFORE TAKEOFF	
PF	PM
Select ND to an appropriate range for takeoff	
When clearance is obtained to enter active runway for lineup / takeoff, crew are to accomplish the following: 1. Check LNAV and VNAV are armed. 2. Verify FMC and Departure RWY tallies.	
Call "Before Takeoff Checklist below the Cleared for Lineup / Takeoff Line",	
	1. Announce on PA "Cabin Crew to your takeoff stations" 2. POSITION light switch – STROBE & STEADY. 3. LANDING light switches – ON. 4. Use other lights as required. 5. Set transponder mode selector to TA/RA.
Verify that the Takeoff Clearance is obtained.	
	Accomplish and Announce "Before Takeoff Checklist Complete".

## 2.3 Take-Off Clearance by ATC

According to Manual of Air Traffic Service, paragraph (7.11.3.4), the air traffic controller may issue a take-off clearance when SIA 761 is ready for take-off and at or approaching the departure runway and the traffic situation permits.

Regarding the paragraph (7.11.3.5), in the interest of expediting traffic, the air traffic controller may issue a clearance for immediate take-off to SIA 761 before it enters the runway. On acceptance of such clearance, SIA 761 shall taxi out to the runway and take-off in one continuous movement. In this incident, the air traffic controller did not give a clearance for immediate take-off to SIA 761.



### 7.10 ORDER OF PRIORITY FOR ARRIVING AND DEPARTING AIRCRAFT

An aircraft landing or in the final stages of an approach to land shall normally have priority over an aircraft intending to depart from the same or an intersecting runway.

### 7.11 CONTROL OF DEPARTING AIRCRAFT

#### 7.11.1 Departure sequence

Departures shall normally be cleared in the order in which they are ready for take-off, except that deviations may be made from this order of priority to facilitate the maximum number of departures with the least average delay. Factors which should be considered in relation to the departure sequence include, inter alia:

- a) types of aircraft and their relative performance;
- b) routes to be followed after take-off;
- c) any specified minimum departure interval between take-offs;
- d) need to apply wake turbulence separation minima;
- e) aircraft which should be afforded priority; and
- f) aircraft subject to ATFM requirements.

#### 7.11.2 Separation of departing aircraft

A departing aircraft will not normally be permitted to commence take-off until the preceding departing aircraft has crossed the end of the runway-in-use or has started a turn or until all preceding landing aircraft are clear of the runway-in-use.

#### 7.11.3 Take-off clearance

7.11.3.1 Take-off clearance may be issued to an aircraft when there is reasonable assurance that the separation in

7.11.2 will exist when the aircraft commences take-off.

7.11.3.2 When an ATC clearance is required prior to takeoff, the take-off clearance shall not be issued until the ATC clearance has been transmitted to and acknowledged by the aircraft concerned. The ATC clearance shall be forwarded to the aerodrome control tower with the least possible delay after receipt of a request made by the tower or prior to such request if practicable.

7.11.3.3 The expression TAKE-OFF shall only be used in radiotelephony when an aircraft is cleared for take-off or when cancelling a take-off clearance.

*Note.* — The expression TORA, pronounced TOR-AH, may be used to indicate take-off run available.

7.11.3.4 Subject to 7.10.3.2, the take-off clearance shall be issued when the aircraft is ready for take-off and at or approaching the departure runway, and the traffic situation permits. To reduce the potential for misunderstanding, the take-off clearance shall include the designator of the departure runway.

7.11.3.5 In the interest of expediting traffic, a clearance for immediate take-off may be issued to an aircraft before it enters the runway. On acceptance of such clearance the aircraft shall taxi out to the runway and take off in one continuous movement.

## 2.4 Procedures of Runway Incursion or Obstructed Runway

According to Manual of Air Traffic Service, paragraph (7.6.3), in the event the aerodrome controller observes, after a take-off clearance or a landing clearance has been issued, any obstruction on the runway likely to impair the safety of an aircraft taking off or landing, such as a runway incursion by an aircraft or vehicle, or animals or flocks of birds on the runway, appropriate action shall be taken as follows:

- a) Cancel the take-off clearance for a departing aircraft;
- b) Instruct a landing aircraft to execute a go-around or missed approach;
- c) In all cases inform the aircraft of the runway incursion or obstruction and its location in relation to the runway.



7.6.2.2 Essential local traffic shall be considered to consist of any aircraft, vehicle or personnel on or near the manoeuvring area or traffic operating in the vicinity of the aerodrome, which may constitute a hazard to the aircraft concerned.

7.6.2.3 Essential local traffic shall be described so as to be easily identified.

### 7.6.3 Runway Incursion or Obstructed Runway

In the event the aerodrome controller observes, after a take-off clearance or a landing clearance has been issued, any obstruction on the runway likely to impair the safety of an aircraft taking off or landing, such as a runway incursion by an aircraft or vehicle, or animals or flocks of birds on the runway, appropriate action shall be taken as follows:

- a) cancel the take-off clearance for a departing aircraft;
- b) instruct a landing aircraft to execute a go-around or missed approach;
- c) in all cases inform the aircraft of the runway incursion or obstruction and its location in relation to the runway.

*Note.— Animals and flocks of birds may constitute an obstruction with regard to runway operations. In addition, an aborted take-off or a go-around executed after touchdown may expose the aeroplane to the risk of overrunning the runway. Moreover, a low altitude missed approach may expose the aeroplane to the risk of a tail strike. Pilots may, therefore, have to exercise their judgement in accordance with Annex 2, 2.4, concerning the authority of the pilot-in-command of an aircraft.*

7.6.3.1 Following any occurrence involving an obstruction on the runway or a runway incursion, pilots and controllers shall complete an air traffic incident report in accordance with the ICAO model air traffic incident report form.

### 7.6.4 Uncertainty of position on the manoeuvring area

7.6.4.1 Except as provided for 7.6.4.2 below, a pilot in doubt as to the position of the aircraft with respect to the manoeuvring area shall immediately:

- a) Stop the aircraft; and
- b) Simultaneously notify the appropriate ATS unit of the circumstances (including the last known position).

7.6.4.2 In those situations where a pilot is in doubt as to the position of the aircraft with respect to the manoeuvring area, but recognizes that the aircraft is on a runway, the pilot shall immediately:

- a) Notify the appropriate ATS unit of the circumstances (including the last known position);
- b) If able to locate a nearby suitable taxiway, vacate the runway as expeditiously as possible, unless otherwise instructed by the ATS unit; and then,
- c) Stop the aircraft.

7.6.4.3 A vehicle driver in doubt as to the position of the vehicle with respect to the manoeuvring area shall immediately:

- a) Notify the appropriate ATS unit of the circumstances (including the last known position);
- b) Simultaneously, unless otherwise instructed by the ATS unit, vacate the landing area, taxiway, or other part of the manoeuvring area, to a safe distance as expeditiously as possible; and then,

c) Stop the vehicle.

The air traffic controllers were taught about the runway incursion in the Basic ATC course but there was no recurrent training for it in the work place.

In this incident, as the air traffic control personnel on duty assumed that there was no runway incursion, they did not cancel the take-off clearance for SIA-761 and gave instruction only "Hold at the present position". In addition, they allowed UBA-020 to continue to land instead of instructing it to execute a go-around. As they were a lack of awareness about the runway incursion, they did not comply with these procedures.

## 2.5 Usage of Standard Phraseology by ATC

Regarding the usage of standard phraseology on and in the vicinity of aerodrome, the air traffic controller only said "Hold at present position" instead of the standard radiotelephony "Hold position, cancel take-off I say again cancel take-off (reasons)" when asking the SIA 761 to stop.

Manual of Air Traffic Service	CHAPTER 12- Phraseology
<p>and await take-off clearance</p> <p>... conditional clearances</p> <p>... acknowledgement of a conditional clearance</p> <p>... confirmation or otherwise of the readback of conditional clearance</p> <p><b>12.6.4.11 TAKE-OFF CLEARANCE</b></p> <p>... when reduced runway separation is used</p> <p>... when take-off clearance has not been complied with</p> <p>... to cancel a take-off clearance</p>	<p>g) LINE UP [AND WAIT];</p> <p>†h) LINE UP RUNWAY (number);</p> <p>i) LINE UP. BE READY FOR IMMEDIATE DEPARTURE;</p> <p>‡j) (condition) LINE UP (brief reiteration of the condition);</p> <p>*k) (condition) LINING UP (brief reiteration of the condition);</p> <p>l) [THAT IS] CORRECT (or NEGATIVE) [I SAY AGAIN] ... (as appropriate).</p> <p>* Denotes pilot transmission.</p> <p>† When there is the possibility of confusion during multiple runway operations.</p> <p>‡ Provisions concerning the use of conditional clearances are contained in 12.2.7.</p> <p>a) RUNWAY (number) CLEARED FOR TAKE-OFF [REPORT AIRBORNE];</p> <p>b) (traffic information) RUNWAY (number) CLEARED FOR TAKE-OFF;</p> <p>c) TAKE OFF IMMEDIATELY OR VACATE RUNWAY [(instructions)];</p> <p>d) TAKE OFF IMMEDIATELY OR HOLD SHORT OF RUNWAY;</p> <p>e) HOLD POSITION, CANCEL TAKE-OFF I SAY AGAIN CANCEL TAKE-OFF (reasons);</p> <p>*f) HOLDING;</p>



CIRCUMSTANCES	PHRASEOLOGIES
<p>... to stop a take-off after an aircraft has commenced take-off roll</p> <p>... for helicopter operations</p>	<p>g) STOP IMMEDIATELY [(repeat aircraft call sign) STOP IMMEDIATELY];</p> <p>*h) STOPPING;</p> <p>i) CLEARED FOR TAKE-OFF [FROM (location)] (present position, taxiway, final approach and take-off area, runway and number);</p> <p>*j) REQUEST DEPARTURE INSTRUCTIONS;</p> <p>k) AFTER DEPARTURE TURN RIGHT (or LEFT, or CLIMB) (instructions as appropriate).</p> <p>* Denotes pilot transmission. HOLDING and STOPPING are the procedural responses to e) and g) respectively.</p>
<p>12.6.4.12 TURN OR CLIMB INSTRUCTIONS AFTER TAKE-OFF</p> <p>... to request airborne time</p> <p>... heading to be followed</p> <p>... when a specific track is to be followed</p>	<p>*a) REQUEST RIGHT (or LEFT) TURN;</p> <p>b) RIGHT (or LEFT) TURN APPROVED;</p> <p>c) WILL ADVISE LATER FOR RIGHT (or LEFT) TURN;</p> <p>d) REPORT AIRBORNE;</p> <p>e) AIRBORNE (time);</p> <p>f) AFTER PASSING (level) (instructions);</p> <p>g) CONTINUE RUNWAY HEADING (instructions);</p> <p>h) TRACK EXTENDED CENTRE LINE (instructions);</p> <p>i) CLIMB STRAIGHT AHEAD (instructions).</p> <p>* Denotes pilot transmission.</p>
<p>12.6.4.13 ENTERING AN AERODROME TRAFFIC CIRCUIT</p>	<p>*a) [aircraft type] (position) (level) FOR LANDING;</p> <p>b) JOIN [(direction of circuit)] (position in circuit) (runway number) [SURFACE] WIND (direction and speed) (units) [TEMPERATURE [MINUS] (number)] QNH (or QFE) (number) [(units)] [TRAFFIC (detail)];</p> <p>c) MAKE STRAIGHT-IN APPROACH, RUNWAY (number) [SURFACE] WIND (direction and speed) (units) [TEMPERATURE [MINUS] (number)] QNH (or QFE) (number) [(units)] [TRAFFIC (detail)];</p>

### **3 CONCLUSIONS**

#### **3.1 Findings**

From the evidence available, the following findings are identified. These findings should not be read as apportioning blame or liability to any particular organization or individual:

- 3.1.1** The air traffic controller gave take-off clearance early to the SIA 761 before arriving at the holding point.
- 3.1.2** The air traffic controller only said "Hold at present position" instead of the standard radiotelephony "Hold position, cancel take-off I say again cancel take-off (reasons)" when asking the SIA 761 to stop at the holding point.
- 3.1.3** There was a difference between ATC recorded information and testimonies of the air traffic controllers regarding giving the arriving aircraft information on approach to the SIA 761. (In the ATC recorded information, the controller informed the SIA 761 that the landing aircraft was 7 NM to touchdown. However, the controllers' testimonies stated that the landing aircraft, UBA 020, was 9 NM to touchdown when SIA 761 reported that it was ready for take-off.)
- 3.1.4** The air traffic controller did not comply with the procedures of Runway Incursion and Obstructed Runway stated in Manual of Air Traffic Service.
- 3.1.5** There was a lack of awareness about the runway incursion among the air traffic control personnel on duty.
- 3.1.6** The air traffic controller is required to provide a safe separation between take-off and landing aircraft based on the type and performance of aircraft.
- 3.1.7** ATC and the aircraft operator did not report this incident to the Myanmar Transport Safety Branch (MTSB) in a timely manner.

### **4 SAFETY RECOMMENDATIONS**

To reduce and eliminate of accidents and incidents, MTSB recommended the followings:

- 4.1** The air traffic controller should comply with the procedures of Runway Incursion and Obstructed Runway stated in Manual of Air Traffic Service.
- 4.2** The air traffic controllers responsible for this incident should be given training courses on the Manual of Air Traffic Service, Aerodrome Control and Safety Management System.

- 4.3 ATC Service provider should organize and conduct a departmental workshop on ATC Unit Instruction, Runway Safety Programme, Prevention of Runway Incursion, Aircraft Performance, and Recording in the ATC Logbook as well as Reporting to MTSB and the stakeholders whenever there is an occurrence.
- 4.4 The aircraft operator is encouraged to report to Myanmar Transport Safety Branch (MTSB) whenever required.

## **5 SAFETY ACTIONS**

During the course of investigation and through the discussion with MTSB, ATC service provider has taken the following safety actions:

- 5.1 Departmental Workshop on Safety
- 5.2 Safety Management System Training Courses
- 5.3 Recurrent Training and Discussion for prevention of Runway Incursion