



FINAL REPORT

Separation Minima Infringement Incident Involving AirAsia Flight AXM 46, SriLankan Airlines Flights ALK 607 and ALK 104, bearing aircraft registrations 9M-AJG, 4R-ALR, and 4R-EXR respectively, on 19th September 2023 at Bandaranaike International Airport, Katunayake, Sri Lanka.

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Figure 1: Radar picture, separation break down AXM46 and ALK607

Figure 2: Arrival star from Male (LALUM 1A) and Position MABAL

Figure 3: Figure 02 - (Ref AIP Sri Lanka VCBI AD 2-105)

GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

AASL	Airport & Aviation Services (SL)(Private) Ltd
AIP	Aeronautical Information Publication
ANSP	Air Navigation Service Provider
ANS	Air Navigation Services
ATC	Air Traffic Controller
ATM	Air Traffic Management
BIA	Bandaranaike International Airport, Katunayake
CAASL	Civil Aviation Authority of Sri Lanka
ft	feet
ILS	Instrument Landing System
KT	Knots
SLCAP	Sri Lanka Civil Aviation Publication
SLMATS	Sri Lanka Manual of Air Traffic Services
RWY	Runway
UOI	Unit Operation Instructions
UTC	Coordinated Universal Time
VCBI	Bandaranaike International Airport, Katunayake, Sri Lanka
VHF	Very High Frequency
METAR	Aviation Routine Weather Report
SHRA	Light Showers of Rain
SCT	Scattered Clouds
BKN	Broken Clouds
NOSIG	No Significant Change
Q1013	Aerodrome Level Pressure at VCBI, converted to Mean Sea Level pressure using International Standard Atmospheric conditions is 1013 Hectopascals
DZ	Drizzle over the airfield
ELPC	Extended Level Proficiency Check
MHz	Megahertz
STAR	Standard Arrival Route



SYNOPSIS

This incident involved two arriving flights, Sri Lankan Airlines flight, ALK 607 (Type A333), Sri Lankan Airlines flight, ALK 104 (Type A320) and one departing flight, Air Asia, AXM 46 (Type A320) to and from Bandaranayake International Airport (VCBI) on 19th September 2023.

AXM46 out bound to Kuala Lumpur, Malaysia was departing from runway 22 whereas ALK607 arriving from Sydney, Australia had been cleared for an approach for landing on runway 04 in the reciprocal direction of AXM46 departure. While the actions were taken to separate the two aircraft, in the process the Standard Minimum Separation between aircraft in the surveillance Radar environment was violated.

Subsequently, while ALK104 was carrying out an approach for landing at runway 22, the same ALK607 was positioned to carry out an approach for landing at runway 04 when the mis approach procedure for runway 22 was to climb on runway heading up to 2000ft which overlaps with the approach path of ALK607.

The incident was notified to the Civil Aviation Authority of Sri Lanka (herein after refers as “Authority”) by Head of ANS of the ANSP via a Voluntary & Confidential Aviation Occurrence Report, in Online Safety Reporting Framework established by the CAASL. Accordingly, the Authority appointed a team to investigate this incident with a view to prevent the recurrence of similar events.

1 FACTUAL INFORMATION

1.1 History of the flight

Runway-in-use at VCBI at the time of incident was recorded as RWY 22. ALK 607 arriving from Sydney had deviated far towards west due to bad weather and was expecting RWY 04 for landing. ALK104 was enroute from Maldives for RWY 22. The departure, AirAsia, AXM46, was at the final stages of her departure from Colombo to Kuala Lumpur, Malaysia using RWY 22.

No confirmation was provided to ALK607 regarding its request to use RWY 04 for landing. Additionally, neither the aircraft under the control nor the Control Tower was informed of the arrival sequence by the Approach Controller. ALK607 was tracking towards the final approach area RWY04 on its own was not positively directed to join a point on the final approach or to rejoin a STAR.

Meanwhile, AXM46 had been cleared for take-off ahead of ALK 607 by the Tower Controller. While AXM46 was rolling on RWY 22, ALK607 had established at 6NM on final approach on RWY 04. At that moment both aircraft ALK607 and AXM46 were



on reciprocal Tracks arrival was on unrestricted descend to land and the departure was on unrestricted climb respectively.

ALK607 was then suggested to make an orbit to the right, to which the aircraft accepted and had initiated a right orbit, and the aircraft requested climb to 2000ft while on orbit. AXM46 got airborne at 1752 UTC making a right turn Heading 310 degrees as instructed by the Approach Controller. ALK607 and AXM46 was positioned at a lateral distance of 3.2 NM between each other constituting the breaking down of Standard minimum lateral Separation between aircraft on the surveillance airspace.

Subsequently, ALK104 was cleared to establish on the ILS RWY 22, as number one in sequence. Once established on the ILS, ALK104 was transferred to the Control Tower. Despite the missed approach procedure for ILS Z approach for RWY 22 was '*climb to 2000ft on runway heading. Track direct to PASKU and hold*', the Approach Controller instructed the ALK607 to descend 1500ft and re-establish on the Localizer RWY04, positioning ALK607 on the missed approach path of ALK104. When ALK607 was cleared to for the ILS approach, the ILS RWY04 Localizer was not available as it had not been switched on at that time as ALK104 was continuing its approach to land at RWY22 using the localizer of ILS RWY 22.

ALK104 landed RWY 22, and the ILS was switched to RWY 04, where ALK607 then landed on RWY 04.

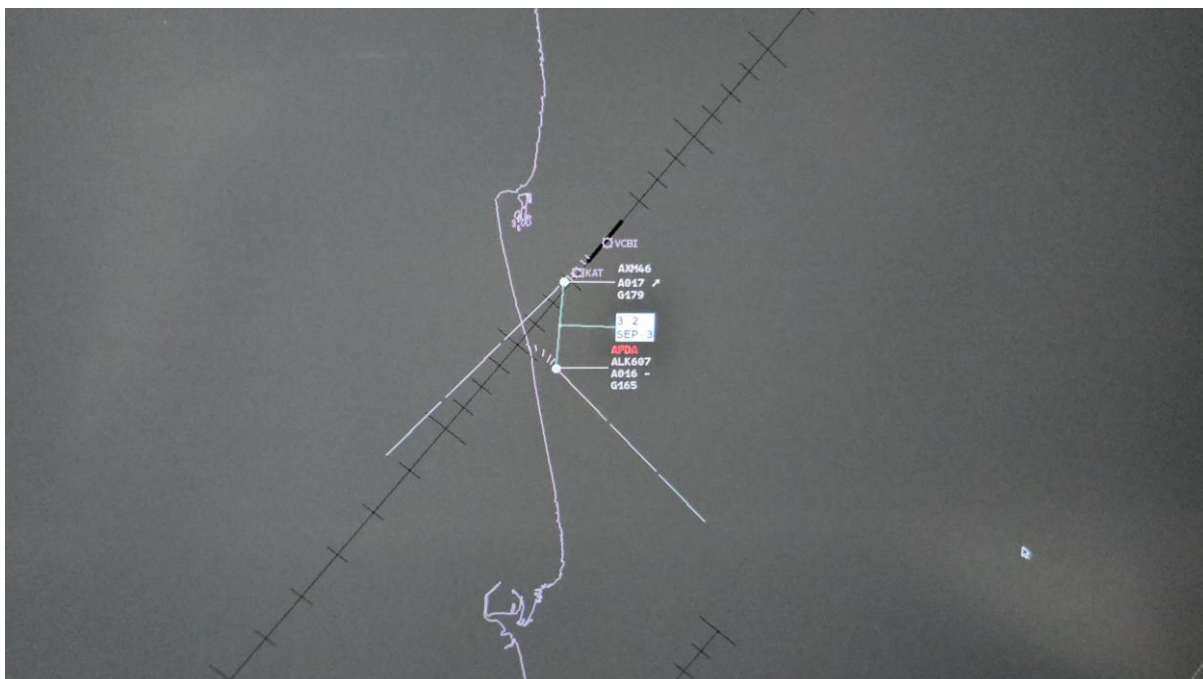


Figure 01: Standard minimum separation break down between AXM46 and ALK607



1.2 Injuries to persons

There were no injuries

1.3 Personnel information

1.3.1 Approach Controller

ATC Licence Number : ATC/131

Licence Validity : 09-06-2023 to 08-06-2025

Ratings Validity :

- i. Aerodrome Control Rating - Katunayake: 30-11-2022 to 21-11-2023
- ii. Approach Control Procedure Rating - Katunayake: 23-01-2023 to 19-01-2024
- iii. Approach Control Surveillance Rating: 23-08-2023 to 14-08-2024

1.3.2 Aerodrome Controller

ATC Licence Number : ATC/176

License Validity : 19/05/2023 to 21/08/2025

Ratings Validity :

- i. Aerodrome Control Rating
 - a) Katunayake 25-02-2023 to 15-02-2024
 - b) Ratmalana 25-02-2023 to 15-02-2024
 - c) Mattala 25-02-2023 to 15-02-2024
 - d) Batticaloa 25-02-2023 to 15-02-2024
- ii. Approach Control Procedure Rating
 - (a) Katunayake 25-02-2023 to 15-02-2024

ELPC Level 05 Valid until 21-08-2025

1.4 Aircraft information

Aircraft 1:

Air Operator : Sri Lankan Airlines

Aircraft Manufacturer and Model : Airbus & A333

Flight No : UL607/ALK607

Nationality : Sri Lanka

Registration : 4R-ALR



Aircraft 2:

Air Operator : Air Asia
Aircraft Manufacturer and Model : Airbus & A320
Flight No : AXM46
Nationality : Malaysia
Registration : 9M-AJG

Aircraft 3:

Air Operator : Sri Lankan Airlines
Aircraft Manufacturer and Model : Airbus & A320
Flight No : UL 104/ALK104
Nationality : Sri Lanka
Registration : 4R-EXR

1.5 Meteorological information

1.5.1 Aviation Routine Weather Reports (METARs) issued for VCBI

- METAR VCBI 1710Z 20007KT 9000 –SHRA SCT016 BKN080 24/24 Q1013 NOSIG=
- METAR VCBI 1740Z 15006KT 9000 –SHRA SCT016 BKN080 24/23/Q1013 NOSIG=
- METAR VCBI 1810Z 14004KT 90V180 9000 DZ SCT012 BKN016 24/24 Q1013=

1.5.2 Presence of weather observed by the Aerodrome Control Tower and experienced by aircraft

- Sri Lankan Air Lines flight, ALK 455 landed at time 17:30 UTC at RWY22 had reported that the wind conditions was variable on the approach path, experiencing more of a tailwind. Light clouds covered up to about 500ft. RWY22 had been sighted around 600 - 500ft on the final approach.
- At time 1734 UTC Control Tower had informed the Approach Controller that there was a Drizzle over the field.
- At time 1735 UTC, Malaysian Airlines Flight, MAS179 had landed RWY22 in a reported Cross Wind of 130 /05kts.
- At time 1738 UTC, Malindo Airlines Flight, MXD298 was Cleared to depart from RWY22 with a reported wind of 110/05kts (tailwind condition for RWY22)

- ALK 607 had deviated far towards WEST of her inbound track and been tracking Southwest of Colombo City Restricted area at the time of handing over from the Area Control Centre to the Approach Control Centre VCBI.
- ALK104 also had experienced weather enroute and communicated the same to the Approach Controller specifically mentioning her inability to extend the downwind leg if deemed necessary for delay purposes beyond position MABAL as there was weather build up.

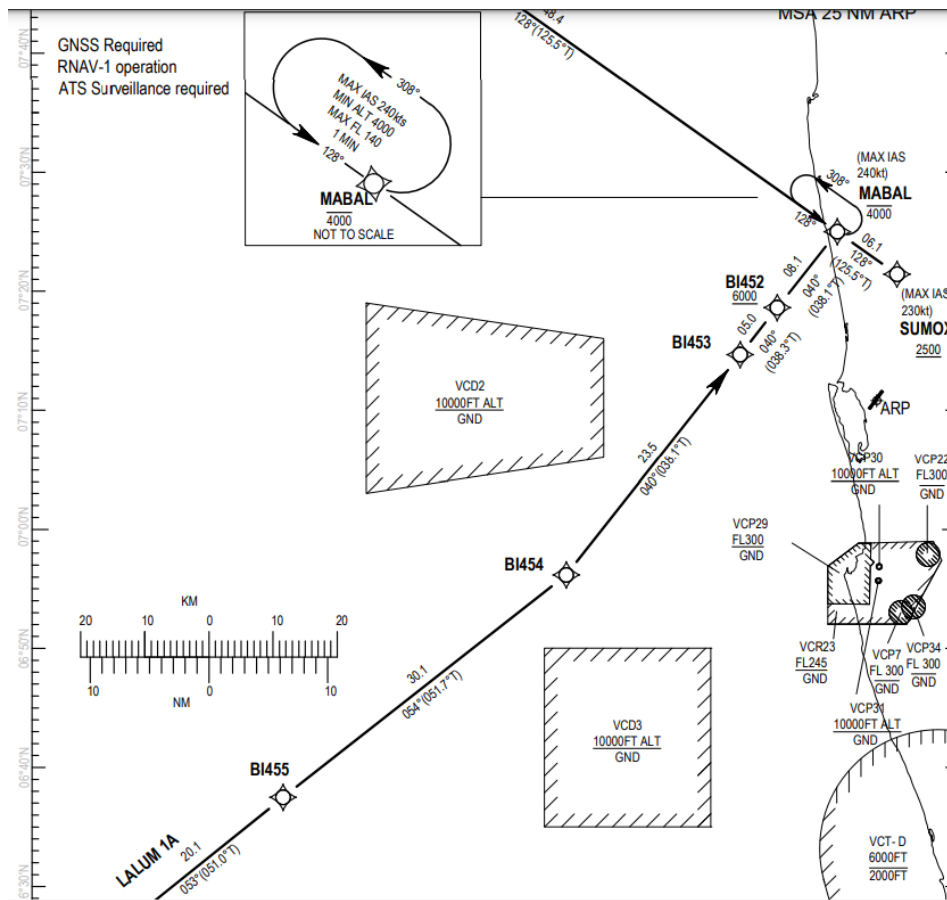


Figure 2, Arrival star from Male (LALUM 1A) and Position MABAL

- ALK 104 which was approaching for RWY 22, had reported RWY22 insight at 700ft.

1.6 Aids to navigation

Instrument Landing System RWY 22

Instrument Landing System RWY04

1.7 Communications

The flight crew had communication via VHF with VCBI Control Tower on 118.7 MHz and VCBI Approach Control Centre on 132.4MHz.



1.8 Aerodrome information

- Name of Aerodrome: Bandaranaike International Airport, Colombo, Sri Lanka
- Location indicator: VCBI
- Reference point (latitude/longitude) and elevation: 071048.68N 0795307.08E 9M(29.5FT)
- Runway identification: 04/22

1.9 Flight recorders

The recordings of Digital Flight Data Recorder and Cockpit Voice Recorder were not required as the investigation to the incident required only data from the ATM systems, which was sufficient to conduct the investigation.

1.10 Organizational and management information

Airport and Aviation Services Sri Lanka (PVT) Limited is the appointed Statutory Service Provider to provide Air Traffic Services, under the Civil Aviation Act No, 14 of 2010.

1.11 Additional information

Nil

1.12 Useful or effective investigation techniques

Investigation conducted as per the procedures and techniques laid down in SLCAP 9999, Aircraft Accident and Incident Investigation Procedure Manual.

2 ANALYSIS

2.1 Failure to provide significant weather information to succeeding arrivals and departures

The failure of Air Traffic Controller to furnish crucial weather information to subsequent arriving and departing flights can have significant safety repercussions. Weather information, such as changes in conditions, turbulence, or adverse weather phenomena, is essential for Pilots to make informed decisions and execute safe and efficient flight operations.

Before the incident unfolded, the Air Traffic Controller (ATC) at the BIA tower conveyed vital information to the Approach controller. This information included the worsening visibility conditions and a shift in the wind pattern, favouring the use of runway 04. Subsequently, the Pilot of ALK455 reported to the control tower that the runway was insight at an altitude of 600 – 500ft noting the presence of a tailwind.

However, there appears to be a lapse in communication or concern on the part of the approach controller. Despite being aware of the changing weather conditions and the



reported tailwind, the approach controller does not seem proactive in disseminating this crucial weather data to incoming flights. This oversight can have significant implications for the safety of subsequent arrivals, as pilots depend on accurate and timely weather information to make informed decisions during the approach and landing phases.

Addressing this issue involves reinforcing communication protocols between the BIA tower and the Approach controller, ensuring that pertinent weather information is promptly shared with incoming flights. This proactive approach is essential for maintaining a high standard of safety and efficiency in air traffic management, particularly when adverse weather conditions or runway preferences come into play.

2.2 Tower Controllers' work arrangement and effect of human factors

The duty Controller at the VCBI Control Tower was discovered to be working on two control positions at the same time, overseeing both Ground and Tower operations. This complexity is further compounded by the simultaneous undertaking of on-the-job training (OJT) session to a trainee ATC being the OJT instructor.

The demand for concurrent attention to ground and tower duties necessitates a higher level of multitasking, requiring the Controller to manage various aspects of air traffic control simultaneously. Additionally, the inclusion of on-the-job training sessions adds another layer of complexity, as the Controller must balance training responsibilities with the real-time demands of operational control.

The influence of peer pressure, particularly power parity between the Approach Controller and Tower Controller where the former was senior than the latter was observed to be further contributed to the dynamic environment. The Tower Controller was seen following the plan of the Approach Controller despite the position of the departing aircraft, AXM46 on the Taxiway RWY22 and subsequent delay took place from AXM46 end, after receiving departure Clearance clearly did not suit the perceived plan of the Approach Controller. The Tower Controller was affirming the Approach Controller despite the ground reality of the situation did not favour Approach Controller's game plan. The expectations associated with the more experienced Controller created an additional layer of stress, potentially affecting the decision-making processes of the Tower Controller.

2.3 Failure to coordinate basic information

In the case of ALK607, the pilot had initially requested confirmation of the specific runway for landing, expressing a preference for RWY04. However, the Approach Controller's response indicated a need to stand by, with a commitment to provide further guidance in 20NM.

Upon ALK607's second inquiry about the availability of runway 04, the situation had changed. The ATC then informed the aircraft about the RWY04's availability, but with



a conditional aspect. The Approach Controller asked whether ALK607 was tracking directly to the position LAROD, which is the intermediate fix for the final approach on ILS RWY04, as indicated in the provided Figure 1. However, the Pilot clarified that they were tracking to the position GOPRU, designed for a 06NM final approach for RWY04. Approach Controller had not positively directed ALK 607 to join a point in the final approach or to rejoin a STAR.

Before this interaction, there had been no explicit communication or confirmation from the Approach Controller regarding the assignment of a RWY04 to ALK607. This lack of clarity persisted until the Pilot sought confirmation during the second inquiry.

A subsequent analysis of audio recordings and surveillance data revealed that, at that point, the Approach Controller did not appear to have the intention of delaying the arrival of ALK607, despite being aware of the impending departure on RWY22.

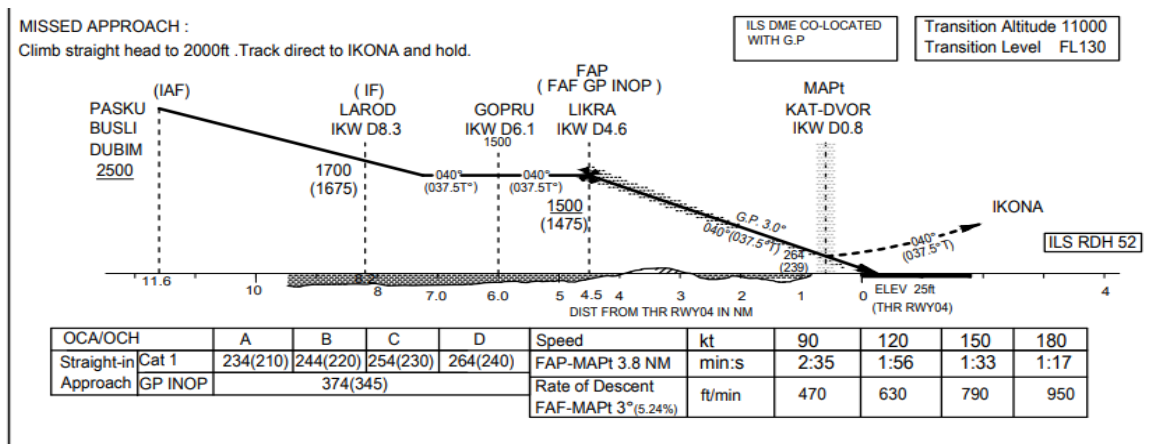


Figure 03 - (Ref AIP Sri Lanka VCBI AD 2-105)

2.4 Lack of Coordination Between the Approach Controller and Tower Controller

It was evident that proper and timely coordination between both the Tower Controller and the Approach Controller did not exist in dealing with the traffic situation. The Approach Controller failed to provide the Tower Controller with the necessary sequencing of arrivals and the mandatory releases.

Adding to the coordination issues, the Approach Controller did not communicate that one of the aircraft, then now designated as number 1, was approaching the RWY04, which was not the initially designated Runway-in-use. This critical information was not relayed to the Tower Controller. Consequently, the Tower Controller had to independently switch on the ILS for RWY04 by relying on the VHF scanner installed at the Control Tower. This lack of communication and coordination raised concerns about the overall efficiency and safety of air traffic management in that scenario.

The Tower Controller failed to provide timely updates to the Approach Controller regarding departure information of AXM46. At 17:42:45, when the Approach Controller inquired about the departure's position, the Tower Controller responded with an estimate of 6 minutes until the aircraft becomes airborne. However, the actual departure occurred



17:52, deviating from the earlier estimation of taking off at 17:48, which indicates a difference of 04 minutes delay from the former estimate.

The delay in taxiing and departure of AXM46, potentially influenced by adverse weather conditions was not adequately communicated to the Approach Controller. As a result, the Approach Controller was not fully informed about the delay, leading to suboptimal decision-making when allowing the departure of AXM46 ahead of ALK607. The lack of effective coordination between the Tower Controller and the Approach Controller has contributed to the poor decision-making process.

After the departure of AXM46, additional events unfolded in the sequencing of the aircraft once more. The initially positioned ALK607 had to undergo a delay. Consequently, the Approach Controller proceeded with ALK104, the aircraft initially sequenced as number 2, to commence the approach for RWY22, thus altering the sequence once again. This critical information was also not communicated to the Tower Controller.

It was noted that the Tower Controller took the initiative to make a confirmation call to the Approach Centre. The purpose of this call was to verify that ALK104 was indeed approaching RWY22. After this confirmation, the Tower Controller adjusted the ILS accordingly.

This highlights a significant breakdown once more in the coordination between the Approach and Tower Controllers.

2.5 Positioning and Sequencing of Aircraft

Positioning of Aircraft: ALK607, an A330 aircraft, was inbound for RWY04, and had been cleared to execute an ILS Z approach for RWY04, a precision instrument approach procedure. The aircraft was on his own was tracking direct to position GOPRU, approximately 06NM from the runway, at an altitude of 1500 feet. Meanwhile, AXM46, had been cleared for take-off from RWY22, which was in the opposite direction from RWY04.

It was noted that ALK607 had been cleared for the approach to RWY04, indicating that air traffic control had authorized its descent and to commence the approach procedure, penetrating the take – off path of AXM46. Similarly, AXM46 had been cleared for take-off from RWY22. Due to the positioning of ALK607 for arrival on RWY04 and AXM46 for departure from RWY 22, the two aircraft were on a head-on collision course. This situation has resulted in the infringement of separation minima. The Approach Controller on realising that AXM 46 had not departed as expected when ALK607 had established on the localizer for RWY04 at position GOPRU, had asked the ALK607 to initiate a right-hand orbit at 1500ft to accommodate the departure. ALK607 had concerns on orbiting at 1500ft as it would have had penetrated the protected area while on orbit and the minimum sector altitude should be 2000ft, the PIC has requested to climb to 2000ft to continue the orbit. Approach Controller has failed to consider the minimum sector altitude in respect of ALK607 while the altering it's intended track that becomes the responsibility of the Approach Controller.



The departing AXM46 was given a right turn to a heading of 310 degrees on departure, the departing AXM46 established communication with the Approach Control centre with a lateral distance of 3.2NM between ALK607 at approximately both the aircraft at same altitudes. This constituted the infringement of the standard minimum separation between aircraft.

2.6 Defunct Role of Radar 2 position at the Traffic Scenario.

The Approach Control function at Approach Control Center BIA is planned and executed with the traffic situation being monitored at the two working positions, **R1**- the Active Control Position and **R2** -Position to Monitor and/or assist as necessary the **R1** Controller especially with increased density and/or complexity of traffic under the purview of Approach Control Centre. **R2** Controller is always expected to take-over the Radar Control responsibility straight-away from the **R1** Controller, should any such need arise, which makes it mandatory for **R2** Controller to maintain Radar Identification of all aircraft being Radar Controlled by **R1** Controller.

As such two Controllers are detailed and deployed to work in tandem at **R1** and **R2** Positions at discharging Air Traffic Control duties

Investigators found that the **R2** Controller detailed at the Position Detailing Sheet has marked the individual's presence by signing sheet at the time of this incident.

However, the recordings at **R2** position did not indicate evidence of any contribution made by the **R2** Controller at this complex weather scenario of changing winds, and complex traffic scenario where aircraft are making requests for approaches on opposite direction of the runway while departures are cleared on collision courses. No form of assistance was recorded.

During the investigation the **R2** Controller informed us that during the period of this scenario she was occupied with some other documentary work and she never thought that the traffic situation was a complex one which requires any interventions to be made.

The cross examination of the situation more intensely pointed out two possibilities, either she had been within the floor area where the Controlling taking place engaging with some other work or she had not been within the floor area where the Controlling took place. In either case, it was evident that she had not been manning the **R2** position as expected as detailed in the position log though she had marked her presence in the paper.

The above was a non-compliance with the Unit Operating Instruction of Approach Control Center BIA of SLMATS, Ref: 2.3 CONFIGURATION/ORGANIZATION (ii) Approach Radar Control Position 2 (**R2** Controller)



3 CONCLUSIONS

3.1 Findings and observations

3.1.1 Failure to provide significant weather information to arriving and departing aircraft

- (a) The incident highlighted a critical lapse in communication within Air Traffic Control, particularly between the Approach Controller and incoming flights. Despite being informed of worsening visibility, wind pattern changes favoring RWY04, and the tailwind reported by ALK455, the Approach Controller failed to disseminate this crucial weather information to subsequent flights.

3.1.2 Simultaneous handling of two Control Positions

- (a) The investigation revealed that the Duty Controller at the BIA Tower was managing dual responsibilities, simultaneously handling both Ground and Tower control operations while also conducting an on-the-job training session as an instructor. This multi roles played simultaneously created a highly demanding operational environment, potentially impacting on the Controller's capacity to maintain optimal focus and decision-making.

3.1.3 Poor coordination between the Aerodrome and Approach Controller

- (a) Sri Lanka Manual of Air Traffic Services (SLMATS) Chapter 12.1.1 requires English Language to be used in all operational conversations. It was revealed that operational coordination between aerodrome control tower and approach control at certain critical instances was conducted using Sinhala language.
- (b) The Aerodrome Controller has failed to provide basic mandatory information such as the start-up time of aircraft (ex. MXD185) to Approach control, which were essential for the planning of approach control traffic.
- (c) Failure to coordinate the facilitating of the opposite direction Runway to inbound ALK607 with the Aerodrome Controller.
- (d) The Approach Controller has failed to keep the Aerodrome Controller informed of the sequence in which aircraft would be released on final approach and the runway.
- (e) The Tower Controller has failed to provide accurate and timely updates to the Approach Controller regarding the departure timeline of AXM46. The Approach controller has failed to provide his plan of sequencing the arrivals to the Aerodrome Controller. This poor coordination led to confusion and bad planning where AXM46 had been advised to expedite the departure by the Aerodrome Controller and ALK607 was instructed to maintain maximum approach speed by the Approach Controller.
- (f) Lack of coordination between the Aerodrome and Approach Control has led the Approach Controller to instruct ALK607 two times, to establish on the ILS without the ILS equipment being switched on.

3.1.4 Use of non-standard phraseology

- (a) It was observed frequent usage of non-standard phraseology both the Approach Controller and the Tower Controller Coordination in handling this situation



3.1.5 Separation minima infringement

- (a) The Approach Controller has positioned ALK607 for landing on RWY04 and AXM46 for departing from RWY22 resulting in both aircraft being positioned for an unrestricted collision course for a moment of time. When the provision of a solution to the issue Approach Controller has failed to maintain the minimum required separation standard between aircraft in surveillance environment. This constituted non-compliance with Section 6.3 of the Unit Operation instruction of Colombo Approach Control Centre of SLMATS has led to an infringement of standard minimum separation between ALK 607 and AXM46.
- (b) Failure to comply with the provisions of VCBI AD2-109, Instrument Approach Chart ILS Z and Localizer RWY 22 stipulated in AIP- Sri Lanka, by positioning ALK607 on the protected airspace of the missed approach segment whilst ALK104 was carrying out the ILS Approach for RWY22, which had not completed the landing.
- (c) Failure to maintain Flight Progress Strips during the incident as required by SLMATS Appendix 2 – UOI BIA Approach Control Centre, in section 3.2.1.3.a(i), b(i).
- (d) Failure to establish identification of AXM46 on departure by the Approach Controller as required by the Chapter 8, 8.6.2.1.1 of SLMATS, which required the Approach Controller to establish aircraft identification and the Pilot being informed before providing an ATS surveillance service.
- (e) Failure to report the incident to the CAASL, which is a mandatory requirement as stipulated in Implementation Standard – SLCAIS 006 issued by the DGCA.
- (f) Failure to comply with the Mandatory Occurrence reporting system of ATS Safety Management System.

3.1.6. Non- manning of the R2 Controller Position at instance of the occurrence

- (a) At the time of occurrence, the R2 Controlling position has not manned by the detailed Controller, though the detailing sheet had been signed to mark the presence. This constitutes a non-compliance with the Unit Operating Instruction of Approach Control Center BIA of SLMATS, Ref: 2.3 CONFIGURATION/ORGANIZATION
(ii) Approach Radar Control Position 2 (R2 Controller)

4 SAFETY ACTIONS & SAFETY RECOMMENDATIONS

4.1 Safety actions

4.1.1 Air Navigation Service Provider

- (a) The ANS Division of AASL was recommended to conduct a safety assessment on opposite runway operations and to develop a Standard Operating Procedure (SOP) for Opposite Direction Runway Operations. The SOPs developed based on this immediate safety recommendation were subsequently reviewed and accepted by the CAASL.



4.1.2 Air Traffic Controller

The following training was recommended to the involved ATC;

(a) Approved Refresher Training Program for Aerodrome Control.

- I. A customized training program on Approach Control Surveillance, comprising of following modules of the approved ICAO 054-APPROACH/AREA SURVEILLANCE CONTROL TRAINING curriculum at minimum.
 - i. OPS 1: RADAR EQUIPMENT AT ATC UNIT
Subtopics C, D, E, F, G and K
 - ii. OPS 2; USE OF RADAR IN AIR TRAFFIC CONTROL SERVICE
All subtopics from A to E shall be covered
 - iii. OPS 3; GENERAL RADAR PROCEDURES
All subtopics from A to N shall be covered
 - iv. OPS 4; USE OF RADAR IN APPROACH CONTROL SERVICE
All subtopics from A to H shall be covered
 - v. OPS 7; ATC CONTINGENCY PROCEDURES UNDER RADAR
All subtopics from A to C shall be covered
 - vi. OPS 8; RADAR PHRASEOLOGIES
 - vii. OPS 9; LOCAL RADAR SYSTEMS' DATA & PROCEDURES
 - viii. OPS 10; TECHNIQUES OF A SAFE AND EFFECTIVE RADAR CONTROLLER
- II. Simulator exercises identified in the Approved Curriculum of ICAO 054 at minimum
 - i. SIM 05: Headings & Actions in the Traffic Circuit for ILS Approaches, selection of Priority & effect Coordination
 - ii. SIM 06 A: Achieve Safe & Efficient Approach Sequence
 - iii. SIM 06 B: Introducing Failure of Aircraft's Radio Transmitter
 - iv. SIM 08 C: Radar Departures in-between Successive Arrivals in a Landing Sequence and introducing Complete Communication Failure of an Aircraft
 - v. SIM 09: Resolve Conflicts between Aircraft with Different Speeds and other Performance Characteristics and Aircraft with a Faulty/Intermittent SSR Transponder.
 - vi. SIM 10: Radar Separation between Holding Aircraft and other aircraft in Flight and Departures/Arrivals from/to 2nd Aerodrome within area of jurisdiction of Approach and an Aircraft with a Bomb Threat.
 - vii. SIM 11: Radar Services to Local Training Flights and Aircraft under Unlawful Interference
 - viii. SIM 12: Handling of Emergencies using Radar
 - ix. SIM 16: RADAR Monitored PBN Arrivals and Departures (SIDS and STARS procedures)



- (b) An assessment by a panel appointed by the Head of ANS to validate the acquisition of requisite knowledge, skills, and attitudes necessary for commencing On-the-Job training, after completing simulator training.
- (c) After completion of the aforementioned training & assessment, a mandatory 60- hour On-the-Job training, supervised by a qualified instructor.
- (d) A final performance evaluation by a panel designated by the Head of ANS and a report on the same shall be submitted to the CAASL.

Note: the concerned ATC had completed all above trainings and assessments at the time of releasing of this final report.

4.2 Safety Recommendations

4.2.1 Air Navigation Service Provider:

(a) **It is recommended the ANSP to issue Fresh Instructions on the following:**

- i. As early as practicable after an aircraft has established communication with the air traffic control unit, meteorological information, on surface wind direction and speed, including significant variations, visibility and present weather shall be transmitted to the aircraft, except for such elements which it is known the aircraft has already received.
- ii. The functions of the Tower Control position and the Ground Control position should at all times be manned independently by appropriately Rated Controllers, unless the Control positions are amalgamated according to the approved duty allocation during low traffic periods.
- iii. English Language shall be used for communication between air traffic control units and operational telephone conversations.
- iv. Ensure strict compliance with SLMATS instructions on exchange of control and movement data between Air Traffic Control units.
- v. Ensure strict compliance with standard phraseology at all times
- vi. Ensure strict compliance with strip marking procedures specified in Chapter 4 of SLMATS and respective Unit Operation Instructions.
- vii. Approach surveillance Controllers shall ensure at all times aircraft identification is established and maintained while guaranteeing the standard separation minima throughout the duration of control operations.



- (b) It is recommended that the Senior Management of ATC shall actively and consistently monitor the operational Controllers to ensure full compliance with the requirements outlined in points I through VII, implementing random reviews and corrective actions as necessary to uphold standards.
- (c) It is recommended that the Unit Operation Instructions of SLMATS pertaining to Approach Control Centre VCBI shall be included with Standard Operating Procedure (SOP) on Opposite Runway Operations and ensure strict compliance of such if opposite runway operations are intended.
- (d) It is recommended the ATC management to issue fresh instructions for the Controllers for strict compliance with the CAASL Implementation Standard – SLCAIS 006 on Aviation Occurrence Reporting System.
- (e) It is recommended that the ATC management increase surveillance at the Approach Control Centre especially to ensure that two Approach Controllers are working in tandem physically at all times as planned and declared in the SLMATS.

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