



International Civil Aviation Organization
ICAO **Twenty-Eighth Meeting of the Regional Airspace Safety
Monitoring Advisory Group (RASMAG/28)**

Bangkok, Thailand, 21 – 24 August 2023

Agenda Item 3: Reports from Asia/Pacific RMAs and EMAs

SUMMARY REPORT OF IDENTIFIED AIRSPACE RISK AND MITIGATIONS

(Presented by Singapore)

SUMMARY

This paper presents the analysis and mitigations to reduce Large Height Deviation (LHD) and Gross Navigation Error (GNE) occurrences in Singapore Flight Information Region (FIR).

1. INTRODUCTION

1.1. This information paper provides the analysis of the contributory factors to airspace deviation errors, namely LHDs and GNEs, in the Singapore FIR and its associated mitigations for the period of 1 January to 31 December 2022.

2. DISCUSSION

Airspace Deviation Errors

2.1. The total number of LHDs reported increased from 30 in 2021 to 45 in 2022. Similarly, there was an increase in reported GNE occurrences from zero in 2021 to one in 2022.

2.2. From analysis, the top LHD error category identified was category 'E' error (Coordination errors in the ATC-to-ATC transfer or control responsibility as a result of human factors issues). The increase in reported LHD occurrences might be due to the increase in traffic volume since the COVID-19 travel restrictions were gradually lifted in 2022. In 2021, the number of air traffic movements in Singapore FIR was 32% of that recorded in 2019. In 2022, the movements had increased to 58%. Of the 45 reported LHD occurrences, 71% were non-risk bearing (See **Figure 1**).

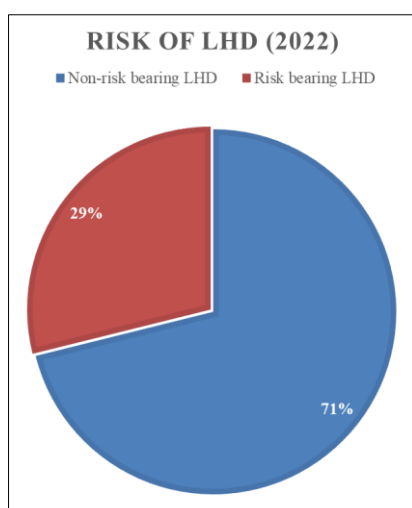


Figure 1: Risk of LHD

2.3. The GNE occurrence reported in 2022 was a Category ‘A’ error (Flight crew deviate without ATC Clearance in the horizontal dimension). The low number of GNE occurrences could be attributed to the improvement in procedures, ATM system and increased awareness of air traffic controllers (ATCOs). The effective use of surveillance data enables early detection of aircraft abnormalities. ATCOs could then seek verification from adjacent FIRs and resolve any potential issues in a timely manner.

Mitigations

2.4. Preparing ATCOs for traffic recovery with safety focused initiatives.

In preparation for the projected recovery in air travel, proactive steps were taken to strengthen and raise safety awareness among ATCOs. Monitoring and targeted support programmes were launched to enhance ATCOs’ readiness and confidence. ATCOs were required to attend a series of comprehensive workshops to refresh their skills and knowledge to handle higher air traffic volume.

2.5. Strengthening the Learning and Informed Culture.

To raise awareness and foster learning, safety related information such as LHD and GNE occurrences, and lessons learnt were shared regularly with ATCOs during the safety dialogue sessions. ATCOs participated actively and many good discussions were generated during these sessions.

2.6. Visual aids.

To improve ATCOs’ situation awareness and reduce human-factor errors, arcs were drawn on the ATC air situation display as a visual aid. The arc acts as a visual cue to remind ATCOs to complete all necessary coordination before the aircraft approach the arc. It helps to prevent recurrence of lapses due to non-revision and non-transfer errors.

CONCLUSION

2.7. The increase in airspace deviation errors within the Singapore FIR might be related to the increase in traffic volume since lifting of COVID-19 travel restrictions.

2.8. Singapore continues to monitor actively on any adverse trends, emerging issues, and develop timely and appropriate mitigations to address them.

3. **ACTION BY THE MEETING**

3.1. The meeting is invited to note the information contained in this paper.

.....