



ICAO

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**Twenty-Fifth Meeting of the Regional Airspace Safety  
Monitoring Advisory Group (RASMAG/25)**  
Video Teleconference, 27 – 30 October 2020

## **Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in the Asia/Pacific Region**

### **SUMMARY REPORT OF IDENTIFIED AIRSPACE RISK OCCURRENCES**

(Presented by Singapore)

#### **SUMMARY**

This paper presents the analysis of Large Height Deviation (LHD) and Gross Navigation Error (GNE) occurrences, the impact of COVID-19 on ATC operations, and the associated mitigations.

## **1. INTRODUCTION**

1.1 This information paper provides an analysis of the contributing factors to airspace deviation errors (LHDs and GNEs) in the Singapore FIR for the period of January – December 2019. This paper also shows the mitigations implemented, which were effective in reducing the LHDs occurrences as compared to the previous reporting period.

1.2 In addition, in view of the global pandemic COVID-19 and the unprecedented effect on traffic volume and working conditions, a safety risk assessment was performed to identify the potential risks.

1.3 As part of Singapore's effort to improve airspace safety, mitigations were introduced, and safety promotions were conducted regularly to promote and heighten safety awareness. All reported airspace deviation errors and COVID-19 related hazards were analysed and assessed. Results were shared with all Air Traffic Controllers (ATCOs).

## **2. DISCUSSION**

### Airspace Deviation Errors and Mitigations

2.1 The analysis focused on coordination errors between ATC units, which is the top contributing factors in Singapore FIR.

2.2 Predominantly, the highest contributing factor for LHDs in the Western Pacific/ South China Sea (SCS) airspace was identified to be CAT 'E' (Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues). With the introduction of proactive mitigations in 2019, there have been significant improvements in Singapore, where the LHDs (including CAT 'E' errors) rate had reduced by 79% as compared to 2018.

2.3 While the implementation of Air Traffic Inter-facility Data Communication (AIDC) has reduced airspace deviation errors, it has also introduced new challenges. One example would be the over reliance on AIDC technology to perform ATC transfer function. In such instances, when a random event where the AIDC transfer did not function as designed, the human operator may be desensitized to spot such errors. This has resulted in the shift of top category LLEs from CAT 'E' (Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues) to CAT 'F' (Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of equipment outage or technical issues).

2.4 The errors arising from inaccurate pilots' estimate has been addressed through the reduced reliance on pilots' estimate and the use of improved system estimates generated from multiple sources of surveillance data such as ADS-B, to corroborate the projected estimate. There was no further occurrence compared to the previous reporting period.

2.5 Continuous safety promotion, through activities such as sharing of lessons learnt during pre-shift briefings by safety officers and electronic safety messages by the safety department, is vital to enhance safety awareness and to reinforce a positive and proactive safety culture. Additionally, it also supports the reporting and learning culture among the ATCOs, to reduce errors.

2.6 Examples of lessons learnt are:

- i. The use of available aide memoirs as reminders to ATCOs of any outstanding task such as checking for AIDC transfer failures at boundary points;
- ii. Reduce last minute revisions of flight levels near transfer boundary to prevent CAT 'E' errors.

#### Impact of COVID-19 on ATC Operations and Mitigations

2.6 A safety risk assessment was conducted to demonstrate that the potential operational safety risks to the provision of Air Navigation Services during this COVID-19 period, and the recovery to normalcy, meets the acceptable level of safety and regulatory requirements.

2.7 Due to the reduction in air traffic, key safety hazards were identified and their corresponding mitigations are as follows:

- i. Mental fatigue, reduced alertness and distractions experienced by operational personnel. These are mitigated by merging ATC positions to increase the Area of Responsibility (AOR) and to maintain a healthy level of stimuli;
- ii. Limited learning opportunities during On-Job-Training (OJT) and challenges in making a realistic and accurate assessment on the trainees' competency. These are addressed through the revision of OJT and validation assessment framework to allow the use of ATC simulator so as to augment and support the training and assessment.
- iii. Skill fade of ATCOs related to the handling of pre-COVID traffic volume and scenarios. This has been managed with the revised programme for proficiency checks and continuous training. Improvements, such as enhancement to the training plan with targeted objectives and related simulated exercises, have ensured that the continual and effective training for rated ATCOs remains sustainable during this prolonged period of reduced traffic. These targeted trainings are supported by various exercises comprising pre-COVID traffic volume and complexity which are made available at all simulators.

### **3. CONCLUSION**

3.1 The airspace deviation errors within the Singapore FIR has decreased significantly. The continuous refinement of mitigations, introduction of new interventions and the strengthening of safety culture are necessary to further reduce the probability of errors.

3.2 Through the COVID-19 safety risk assessment, Singapore has reduced the risk to as low as reasonably practicable and is able to provide continued safe Air Navigation Services during this period and to support operations when the air traffic volume returns to pre-COVID levels.

3.3 Singapore would continue to monitor any adverse trends, identify new issues and develop appropriate and timely mitigations to address them.

4. **ACTION BY THE MEETING**

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

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