

**ICAO****The First Meeting of Air Traffic Management
Automation System Task Force of APANPIRG
(ATMASTF/1)**

Web-conference, 28 – 30 October 2020

Agenda Item 5: Issues and Challenges in implementation
5.8 Ground based safety net**PROGRESSIVE IMPLEMENTATION OF SAFETY NET FUNCTIONS
IN HONG KONG, CHINA**

(Presented by Hong Kong, China)

SUMMARY

This paper presents the experience in progressive implementation of safety net functions in the Air Traffic Management System in Hong Kong, China to enhance safety for ATC operation.

1. INTRODUCTION

1.1 The Air Traffic Management System (ATMS) of Civil Aviation Department, Hong Kong, China was fully commissioned in November 2016. A progressive implementation approach in the implementation of applicable safety net functions in the ATMS was adopted to minimise the risks involved in transition to the ATMS, and to best suit the operational needs of air traffic control officers (ATCOs).

1.2 Safety net functions aim to provide additional levels of assurance in alerting air traffic controllers to any potential infringement of pre-defined safety margins. Corresponding alerts/warnings would be shown on the ATMS display to alert ATCOs who would consider to take appropriate actions in accordance with the procedures.

1.3 As of today, most of applicable safety net functions were implemented for the operational use in Hong Kong, China. This paper shares our experience gained through the progressive implementation of safety net functions.

2 DISCUSSION

2.1 In order to reduce the risks during transition of ATMS, Hong Kong, China, like other CAAs/ANSPs, implemented applicable safety net functions progressively based on local operational environment and needs. In the old ATMS commissioned in 1998 to support the relocation of the Hong Kong International Airport from Kai Tak to Chek Lap Kok, only two safety net functions, namely Short Term Conflict Alert (STCA) and Special Use Airspace Intrusion Warning (SUAIW), were put into operational use. Those two safety net functions, together with the Cleared Level Adherence Monitoring (CLAM), were implemented since the full commissioning of the ATMS in November 2016, providing ATCOs with an additional tool to improve their situational awareness.

Agenda Item 5.8

28 – 30/10/20

2.2 It is our plan to gradually prepare and implement other applicable safety net functions in the ATMS in accordance with the requirements and procedures of the ICAO's Safety Management System. Such approach is supported by the relevant staff members involved in the ATMS development and operation, including both ATCOs and Electronic Engineers.

Planning for the Safety Net Functions implementation

2.3 Before commencement of evaluation of safety net functions, reference was made to the lessons learnt and best practices from other States that successfully implemented the corresponding safety net functions, especially on testing strategy and system parameters.

2.4 During evaluation of the safety net functions, applicability to local environment, the system behavior and human-machine-interface of the ATMS, as well as the operation procedures etc., should be taken into considerations.

Progressive Implementation of the Safety Net Functions

2.5 Advantages for adopting a progressive approach for implementation are as follows:-

- Reducing risks in implementation and operation comparing to deployment of all the safety net functions in one go;
- Reducing the high demand of resources and workload involved in evaluation of the safety net functions; and
- Allowing sufficient time for ATC to evaluate the safety net functions and fine-tune their parameters before embarking on further implementation.

2.6 Following this approach, Hong Kong, China has successfully implemented three additional safety net functions, namely Approach Path Monitoring (APM), Departure Path Monitoring (DPM) and Similar Callsign Advisory (SCA). The safety net functions are operating satisfactorily (see Appendix 1).

2.7 To assess effectiveness of the implemented safety net functions, post implementation review with ATC operations would be conducted to obtain the feedbacks from the front-line staff to identify any fine-tuning of system parameters required. Through four years' concerted efforts, six safety net functions were implemented and available in the ATMS. Riding on the experience gained, Hong Kong, China will continue our endeavours to implement other applicable safety net functions.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the approach progressive approach presented in this paper and discuss any relevant matters as appropriate.



Figure 1: Approach Path Monitoring (APM) alert (two white rectangles are APM funnels)



Figure 2: Departure Path Monitoring (DPM) alert (two white rectangles are DPM funnels)



Figure 3: Similar Callsign Advisory (SCA) alerts (for aircraft XXX732 and XXX722).