



ICAO

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Agenda Item 4: ATM Automation System Implementation Experience by States

4.4: Development of New Technology

UPDATE ON IMPLEMENTATION OF APPROACH SPACING MANAGEMENT SYSTEM AT HONG KONG INTERNATIONAL AIRPORT

(Presented by Hong Kong China)

SUMMARY

An Approach Spacing Management System (ASMS) has been implemented at the Hong Kong International Airport (HKIA) to assist controllers in handling final approach operations under enhanced wake turbulence separation scheme. The ASMS is now under the transition into full operation for handling the traffic in the final approach airspace of Hong Kong Flight Information Region. This paper presents the experience of Hong Kong China in progressively transitioning the ASMS into operation.

1. INTRODUCTION

1.1 Hong Kong China has implemented an ASMS at the HKIA for assisting controllers in handling final approach operation under enhanced wake turbulence separation scheme and improving their consistency in delivering arrival traffic spacing. With the completion of system acceptance testing and flight check, adaptation to local environment and relevant safety assessment activities in January 2023, the ASMS is now under the transition into full operation for handling the traffic in the final approach airspace of Hong Kong Flight Information Region. This paper shares the experience from Hong Kong China during the transition of the ASMS for final approach operations.

2. DISCUSSION

2.1 In order to effectively transition to the use of the ASMS, a comprehensive transition plan had been developed with an aim to balance between the duration of transition period and resources spent on training/trial. The transition process is divided into three stages, namely Human-Machine Interface (HMI) Familiarization, Operational Trial and Full Operation.

HMI Familiarization

2.2 With the completion of the classroom and simulator training, a four-week HMI Familiarization was conducted to prepare the operational staff for using the ASMS in live air traffic control operations. To facilitate the Familiarization, two ASMS positions were set up at the spare positions in the air traffic control centre allowing operational staff, including executive controllers, planners and flight data operators, to get familiar with ASMS under actual working environment. Through this arrangement, controllers could have more hands-on experience for becoming more familiar with the HMI before the operational trial, which increases their confidence in using the new system for managing live traffic. The HMI Familiarization period was an essential component of the transition process for ensuring that the frontline staff was fully prepared for proceeding to the next stage of transition, i.e. Operational Trial.

Operational Trial

2.3 After the completion of HMI Familiarization, an Operational Trial is being conducted to allow air traffic controllers to experience real-life traffic operation using the ASMS. The use of the ASMS was progressively expanded in terms of operating time in order to boost up the competence and confidence of operational staff progressively throughout the whole transition period.

2.4 During the initial phase of the operational trial, the ASMS was used to carry out operations for two sessions on each weekday, with a duration of two hours per session. The time of trial sessions were strategically chosen with moderate level of arrival traffic for controllers to appreciate the change and experience the benefits brought by the new system under a manageable traffic volume. Operational and technical subject matter experts of the ASMS with support from the system supplier were rostered to assist the initial phase of operational trial by providing ad-hoc guidance and support to the operational staff at the spot. The supporting resources were gradually reduced after the confidence on the use of ASMS had been built.



Figure 1 – ASMS Operation During the Operational Trial

Fine Tuning / Optimization and Way Forward

2.5 The Operational Trial is being closely monitored by the project team to assess the ASMS' performance and identify any issues or areas for improvement in the software or local adaptation. After every trial sessions, feedback was gathered from operational staff and the experts of system supplier to determine the required fine-tuning or optimization for improving the system performance and operational behavior in subsequent sessions.

2.6 With positive feedback from operational staff and continuous system improvement through fine-tuning, the Operational Trial has now reached the final phase with daily operation of ASMS extended to eight hours, covering peak hours of HKIA's arriving traffic. Based on the current progress of transition, the ASMS is tentatively planned for Full Operation in the 2nd half of 2023, subject to the final review of operational staff's confidence level, system performance and operational procedures.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the experience of Hong Kong China in the transition into ASMS operation;
- b) note the current progress of ASMS implementation for the Hong Kong International Airport; and
- c) discuss any relevant matter as appropriate
