International Civil Aviation Organization

Eleventh Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/11)

Video Teleconference, 02 – 06 August 2021

Agenda Item 4: Review of Current CDM/ATFM Operations and Problem Areas

EXPERIENCE ON INTEGRATION OF A-CDM WITH ATFM IN HONG KONG INTERNATIONAL AIRPORT

(Presented by Hong Kong China)

SUMMARY

This paper presents an update from Hong Kong China on the progress of integrating Airport-Collaborative Decision Making operations in the Control Tower with Air Traffic Flow Management operations in the Air Traffic Control Centre.

1. INTRODUCTION

1.1 A-CDM operation has been successfully implemented at Hong Kong International Airport (HKIA) since 1 November 2018. Together with the participation in the Multi-Nodal ATFM concept of operations by Hong Kong China, relevant data exchange between A-CDM system and ATFM system was necessary for operational efficiency and capacity enhancement initiatives.

1.2 During the day-to-day operations of the A-CDM system, it was observed that one of the important milestone for operators, calculated Target Start-up Approval Time (TSAT) was often unstable or inaccurate, which led to reduced predictability of operations and awareness of Aircraft Operators (AO) and Ground Handlers (GH).

1.3 As part of the ICAO initiative to integrate A-CDM operations with ATFM operations, a comprehensive review was conducted to identify the issues and to enhance the efficiency of the overall operations.

2. DISCUSSION

HKIA A-CDM Milestones and the integration with ATFM

2.1 A-CDM operations in HKIA made reference to the 16-milestone approach originated from EUROCONTROL and adopted 15 of them in our local implementation. The schematic diagram of all milestones can be found in **Figure 1**.

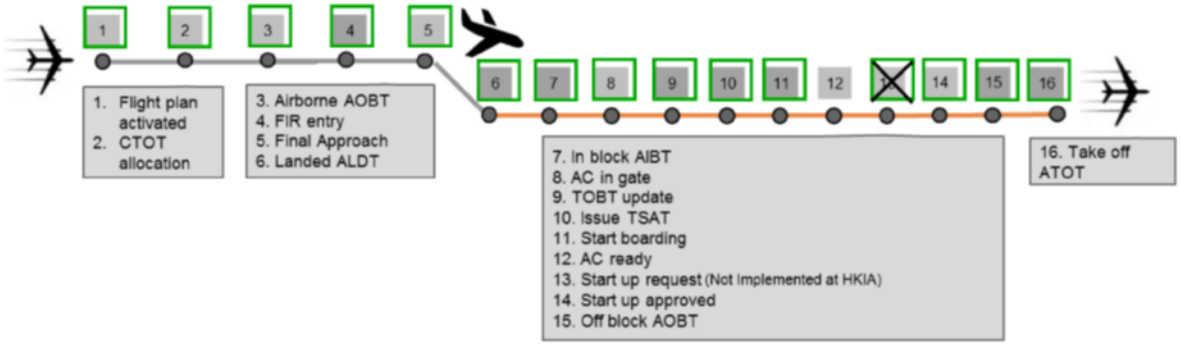

Figure 1: A-CDM Milestones for HKIA

2.2 For a particular flight coming to HKIA and undergoing a short turnaround process prior to departure to its next destination, Hong Kong ATFM personnel targets at allocating and distributing CTOT (Milestone #2), if any, at around 90-120 minutes before EOBT. The CLDT associated with the CTOT assigned will be passed to AO for them to update the TOBT (Milestone #9) in the A-CDM system if necessary. AO/GH will be required to continue updating the TOBT up to a certain point if there is a difference of 5 minutes so as to allow the A-CDM system to deliver the optimal TSAT (Milestone #10) for best overall efficiency and planning.

Departure Release Mechanism at HKIA

2.3 Due to various cross border traffic constraints and integration with overfly traffic, a departure release mechanism, whereby departures for certain routes must be coordinated and approved by Planners in the Air Traffic Control Centre (ATCC), is employed. These routes comprise of more than half of the outbound routes from HKIA.

2.4 The traditional departure release mechanism is for the Pilot in Command (PIC) of the departure to call Tower Clearance Delivery Controller (CDC) at 5 minutes before they are ready for departure. CDC will then coordinate with Planners in ATCC for a departure release. The reason for the 5 minutes call is to ensure the departing aircraft is genuinely ready for departure. As a result of route constraints and restrictions, the subject departures are normally informed of any delays at that moment. By that time, the aircraft may be fully loaded and all passengers have boarded the aircraft. CDC will then enter a new TSAT in the A-CDM system which is updated accordingly and triggers an update to all TSAT and other calculations. The PIC will then see an update to the TSAT time displayed in the docking system of the parking stand. As the delay can be quite substantial at times, the options for the PIC is fairly limited because all passengers have already boarded the flight, and all luggage and cargo are loaded on board.

2.5 Upon a detailed investigation into the issue, it was found that Milestones #10 and #11 are not occurring at the correct sequence i.e. ATC issued TSAT after Boarding. Thus the departure release approval is being assigned too late, not allowing the PIC to make an executive decision on when to start boarding passengers, and TSATs of other flights get revised when the new release time is entered into the system i.e. unstable TSAT.

2.6 After evaluating several options to rectify the issues, a gradual change of the departure release mechanism was adopted so that it is in line with the A-CDM milestones for better overall operational efficiency. The change involved educating AO/GH to strictly follow the requirements of updating TOBT, to enhance Planners confidence in adopting the TTOT calculated by the A-CDM system and to remove the 5 minutes ready call. As planners can only plan their departure release based

on accurate TTOTs, the accurate TTOTs can give the necessary confidence level to plan and release the departure slots much earlier.

2.7 After implementing changes in December 2021, it is noted that a higher percentage of flights were assigned with more accurate TSATs (see **Fig. 2**). Overall, greater operational efficiencies have been achieved within the HKIA A-CDM community and also a more accurate departure demand picture at HKIA can be provided for ATFM purposes.

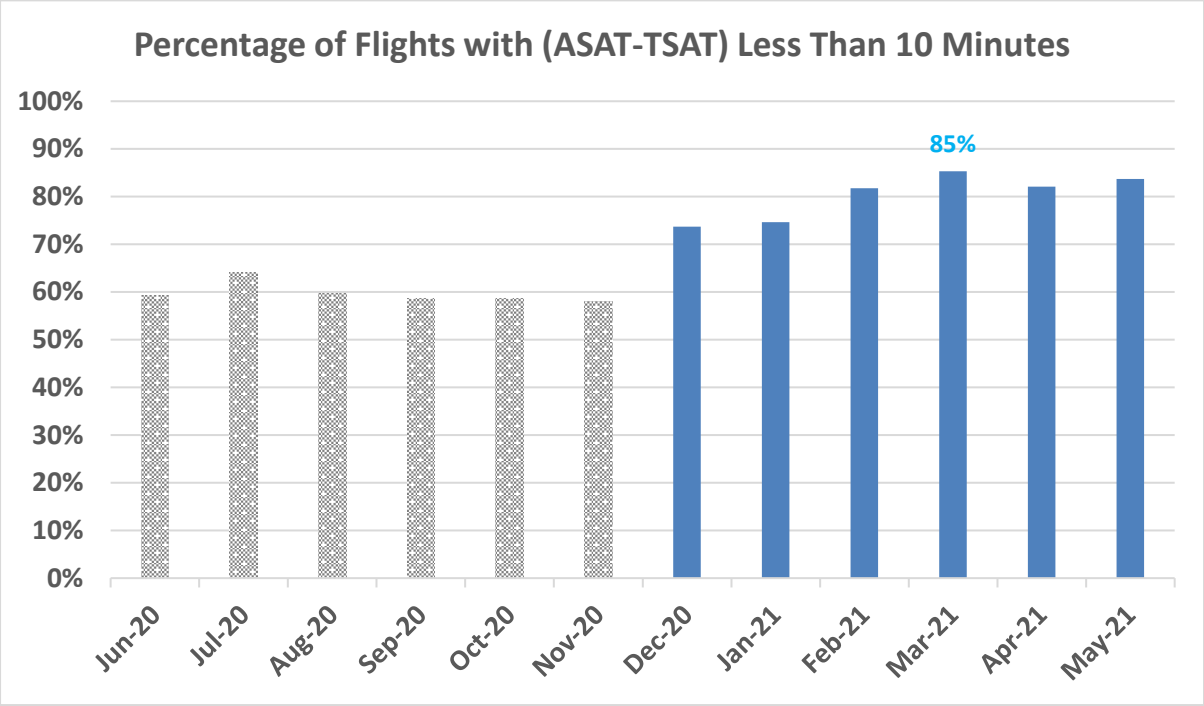

Fig. 2: Comparison of Actual versus Target Startup Times before and After Changes

2.8 Although the changes have brought benefits to the overall workflow, the ultimate goal is for all routes to be 'free flow routes' negating the requirement of a departure release mechanism. In order to make it happen, Hong Kong China is working with neighbouring FIRs on further reducing longitudinal spacing at FIR boundary and hence increasing the route capacity.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) encourage members to join the initiative with Hong Kong China with a view to further reducing longitudinal spacing at FIR boundary and hence increasing the route capacity;

c) encourage members to share their experience and lessons learnt from similar integration activities; and

d) discuss any relevant matters as appropriate.

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