International Civil Aviation Organization

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

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

PROGRESS UPDATES FROM ASIA-PACIFIC CROSS-BORDER MULTI-NODAL ATFM COLLABORATION (AMNAC)

(Presented by China, Hong Kong China, Singapore, Thailand, CANSO, and IATA)

SUMMARY

This paper presents the progress update of the Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC). Formerly known as the Distributed Multi-Nodal ATFM Network Project, the project is a collaborative effort to implement cross-border ATFM in the Asia-Pacific region. This paper discusses recent updates from the project in the past year, including post-operations analysis results, the role of the collaboration during the COVID-19 pandemic, technical progress on ATFM information exchange via AFTN/AMHS network, discussion on the progress of SWIM development for ATFM, and the development of FIXM 4.2 APAC Extension.

1. INTRODUCTION

1.1 The **Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration** (**AMNAC**; formerly Distributed Multi-Nodal ATFM Network Project) has been ongoing since 2015, laying down the foundation for cross-border ATFM in the region under the concept of *Distributed Multi-Nodal ATFM Network*. The concept, upon which the Asia/Pacific Regional Framework for Collaborative ATFM was founded, is based on a network of *ATFM Nodes* responsible for demand-capacity balancing within their area of responsibility while being connected to the network's information exchange infrastructure. The ATFM operations in each node will be based on regionally agreed principles and high-level operating procedures, with local adaptations as necessary.

1.2 In this project, the main focus has been on building the necessary infrastructure for information exchange and developing common operating procedure for member States/Administrations to be able to use **Ground Delay Program (GDP)** to balance traffic demand and resource capacity under distributed ATFM environment. To enable participation by member States/Administrations of varying readiness levels, the project has adopted a tiered level participation model for the work as shown in **Table 1**.

Tiered Level	Capabilities
Level 3	▪ Able to generate, deliver, and receive CTOTs; ▪ Able to comply with CTOTs from all Level-3 ATFM Nodes *Current members:* ▪ *Cambodia, China, Hong Kong China, Singapore, Thailand*

Tiered Level	Capabilities
Level 2	▪ Able to comply with CTOTs from all Level-3 ATFM Nodes *Current members:* ▪ *Indonesia, Malaysia, Myanmar, the Philippines, Viet Nam*
Level 1	▪ Observe and participate in the project progress *Current members:* ▪ *Lao PDR*

Table 1 - Multi-Nodal Tiered Level of Participation and Members

1.3 Core member States/Administrations (project core team) have been reporting project progress at various forums over the years, including the regular meeting of the Air Traffic Flow Management Steering Group (ATFM/SG). This working paper continues the practice of reporting the progress, despite a relatively quiet year owing to the COVID-19 pandemic and significant traffic downturn negating the needs for ATFM measures.

2. DISCUSSION

Operational Progress Updates

Network Post-Operations Analysis

2.1 As reported at the ATFM/SG/10 in 2020, the project core team has developed a network post-operations analysis portal to track the impact of and compliance to GDPs activated over time as the ATFM process became more widely adopted as part of Level-3 States/Administrations' standard ATM operations. The aim of the portal is not to "name and shame" members who did not achieve the desired level of performance, but more importantly to quantitatively identify problem areas to be addressed.

2.2 The network post-operations analysis is a web-based portal and will be updated based on data submitted by Level-3 ANSPs every 3 months. The portal is maintained by Thailand and can be accessed at **https://bit.ly/amnac-poa**.

2.3 Based on the data captured in the portal, the following key observations can be made about the latter half of 2020 and the first half of 2021:

(1) Due to the COVID-19 pandemic and the significant traffic downturn both domestically and internationally, ATFM measure – specifically GDP – has not been used as frequently as during the pre-pandemic years.

(2) The exception was Thailand, which activated several GDPs between September – November 2020 to facilitate taxiway maintenance projects and occasional military air displays at Don Mueang International Airport (VTBD). However, those GDPs primarily affected domestic traffic only. For these GDPs, the compliance rates ranged between 70% - 80% with approximately 1,579 flights affected over the 3 months.

(3) In the first half of 2021, to retain ATFM staff and stakeholders' proficiency during the traffic downturn and to extend the use of Distributed Multi-Nodal ATFM Network concept to East Asia, Hong Kong China also initiated a monthly GDP operational trial (for up to 2 days per month) with no-delay CTOTs being issued and the ATFM process is expected to be followed. For these trial GDPs, the compliance rates ranged between 65% - 90% with approximately 20 – 50 flights affected each month. The monthly trials were well-supported by AMNAC members and proved to be helpful in retaining ATFM familiarity and proficiency.

WP/12 –Ground Delay Programme Operational Trials at Hong Kong International Airport by Hong Kong China provides more detail on this initiative.

Routine Collaboration during the COVID-19 Pandemic

2.4 During the most recent meeting of the project core team held virtually in the early-2020, as the pandemic was beginning its course, the project core team – at the suggestion of IATA – decided to utilize the group's existing bi-weekly ATFM planning web-conference to also exchange ATM-related impact and updates due to the pandemic situation. The effort was supported by ICAO, and an *ATM/ATFM Status Update* document was developed. The document collates States/Administrations' ATM-related updates shared during the web conferences and provides a one-stop guide to the regional situation. To allow regional States/Administrations to quickly access the updated document, ICAO has kindly been hosting the document on its regional **COVID-19 information sharing webpage**.

2.5 Since the beginning of the effort, there have been more than 40 updates to the document. The updates were submitted primarily once every 2 weeks in conjunction with the bi-weekly web conference, although there have been several occasions of *off-cycle* updates provided by States/Administrations due to sudden changes such as additional flight or border-crossing restrictions.

Technical Progress Updates

Technical Sub-Group of the AMNAC

2.6 The Technical Sub-Group was established under AMNAC to address cross-border ATFM information exchange challenges. The focus of the Technical Sub-Group is to identify an information linkage framework, including technical specifications based on the ICAO System-Wide Information Management (SWIM) concept, which is considered the most viable and effective solution to achieve efficient and harmonized cross-border ATFM data communication.

2.7 While working towards the target of SWIM-based ATFM data exchange, it was agreed under AMNAC that, in the near team, ATFM data would be exchanged using the existing EUROCONTROL Slot Allocation Message (SAM) and its related messages distributed over Aeronautical Fixed Telecommunication Network (AFTN) and/or ATS Message Handling System (AMHS) where possible.

ATFM Data Exchange over AFTN/AMHS

2.8 All Level-3 ATFM Nodes have completed the implementation of ATFM data exchange capability over AFTN/AMHS, using SAM, SRM (Slot Request Message), and SLC (Slot Cancellation Message) messages. Besides, Hong Kong China commenced the pilot trials to exchange CTOTs with the ATFM units serving Taipei ACC, Republic of Korea, and Japan in June, July, and August 2020, respectively. Subsequently, Hong Kong China also successfully conducted the operational trials with the aforementioned units in Q1 and Q2 of 2021.

2.9 Moving ahead, Multi-Nodal ATFM Nodes and other States/Administrations, who wish to receive SAM and related messages through AFTN or AMHS to facilitate cross-border ATFM, could approach the Technical Sub-Group to arrange for the technical trials, based on the AFTN/AMHS-based Interface Control Document (ICD) for ATFM, version 2.0, approved by CNS SG/24.

ATFM Data Exchange over SWIM

2.10 The Technical Sub-Group has been working on the technical specifications for the exchange of ATFM data over SWIM technical infrastructure, building on the experience gained and lessons learned from the SWIM in ASEAN Demonstration. Particularly, it was agreed that AMQP (Advance Message Queuing Protocol) version 1.0 messaging protocol together with the utilization of metadata for message routing and FIXM (Flight Information Exchange Model) version 4.1 with the Asia/Pacific Extension will be used for the technical trial over Common aeRonautical Virtual Private Network (CRV) planned to be conducted in Q1/2022.

2.11 With the release of FIXM version 4.2 in February 2021, the Asia/Pacific FIXM version 4.1 Extension is being updated to version 4.2. It is worth noting that data attributes to be included in this updated Asia/Pacific extension are also identified from the new FF-ICE/TBO-based operational requirements, in addition to those required to support the ATFM information exchange for cross-border ATFM operations and ATFM/A-CDM integration in the Asia/Pacific Region.

Maintaining Relevance and Retaining Preparedness

2.12 Despite the significant traffic downturn during the pandemic and the absence of needs for ATFM measures, the collaborative environment fostered by AMNAC over the years has allowed members to continue exchanging information and engaging in pandemic preparedness this past year as evident from the continued web conferences and status updates. While the benefits of doing so may be minimal, they may become apparent and useful as States eventually open up their borders and passengers begin to travel internationally again.

2.13 While ATFM measures are not currently needed regularly, the AMNAC project core team remains committed to ensuring the cross-border ATFM infrastructure for the region continues to be there and ready for members to use whenever needs arise.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper,

b) consider or continue participating in the regular GDP operational trials to retain proficiency,

c) consider or continue participating in the regular updates of ATM/ATFM status and the bi-weekly ATFM planning web-conferences,

d) contact AMNAC Technical Sub-Group to arrange for the technical trials of ATFM data exchange over AFTN/AMHS, if desired, and

e) discuss any relevant matters as appropriate.

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