



International Civil Aviation Organization

**The Second Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/2)**

Hong Kong, China, 1 – 4 October 2013

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**Agenda Item 5: Development of Regional ATFM Framework**

**ATFM CAPACITY SCOPE AND UNITS**

(Presented by Thailand)

**SUMMARY**

This working paper presents needs for the ATFM Steering Group to provide guidance on units and scope of ATFM Airport and Airspace Capacity in support of ATFM Capacity Assessment in the Asia-Pacific region in compliance to APANPIRG Conclusion 24/13.

This paper relates to –

**Strategic Objectives:**

A: *Safety – Enhance global civil aviation safety*

C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

**Global Plan Initiatives:**

GPI-6 Air traffic flow management

**1. INTRODUCTION**

1.1 The meeting is advised that the Asia-Pacific region has been experiencing rapid traffic growth as a part of economic development. For illustrative purposes, Thailand has been experiencing 10-15 percent traffic growth for the past few years. Such rapid traffic growth quickly puts stress on Air Navigation Services infrastructure throughout the region.

1.2 In recognition of the need to enhance Air Navigation Service capacity to handle such rapid growth, ICAO developed Aviation System Block Upgrade (ASBU) framework, with module on regional networked Air Traffic Flow Management forming major part of the ASBU framework since Block 0 (2013) through B0-NOPS.

1.3 In support of the B0-NOPS module, ICAO Headquarters enlisted a group of experts from States, ANSPs, and International Organizations with ATFM experience (ATFM Manual Coordination Team) to develop the ICAO Manual on Collaborative ATFM (Doc 9971), providing guidance on Collaborative ATFM implementation. A draft of Doc 9971 was released during the ICAO Air Navigation Conference (AN-Conf/12) in November 2012, soliciting comments and suggestions from States. In response, ICAO continued to further develop the manual through the ATFM Manual Coordination Team with updated document to be released at the Advanced ATM Techniques Symposium and Workshop in November 2013 at Montreal, Canada.

1.4 Thailand, along with other States in Asia-Pacific region including Hong Kong, China; India; Japan and the United States, was privileged to be invited to contribute in development of the manual.

1.5 Meanwhile, ICAO Asia-Pacific moved forward to develop ICAO Asia/Pacific Seamless ATM Plan, including provision on CDM/ATFM development to support Seamless ATM Operations in the region. Version 1.0 of the Seamless ATM Plan was endorsed by APANPIRG/24 meeting in June 2013.

1.6 Along with endorsement of the ICAO Asia/Pacific Seamless ATM Plan, APANPIRG/24 meeting approved Conclusion 21/15 that States participate in and support the Asia/Pacific ATFM Steering Group to develop a common Regional ATFM framework, which addresses ATFM implementation and ATFM operational issues in the Asia/Pacific region.

1.7 Moreover, APANPIRG/24 approved Conclusion 21/13 urging States to establish capacity assessment and adjustment mechanisms, and regular review of all aerodromes and ATC sectors where traffic demand is expected to reach capacity, or is experiencing traffic congestion, and to report the assessment outcomes to the Asia/Pacific Regional Office prior to 1 May 2014.

## **2. DISCUSSION**

2.1 While Thailand's involvement in significant ATFM activities can be traced to development and implementation of ATFM procedure through the Bay of Bengal and Afghanistan airspace during busy night time period using the Bay of Bengal Cooperative ATFM System (BOBCAT), Thailand commissioned Capacity Assessment on Bangkok ACC sectors in 2010.

2.2 Moreover, airport capacity for six major airports involved in IATA Slot Coordination process including Suvarnabhumi Airport (VTBS/BKK), Don Mueang (VTBD/DMK), Phuket (VTSP/HKT), and Chiang Mai (VTCC/CNX) have been established for some time.

2.3 Moreover, as ANSP in the Thai airspace, AEROTHAI developed an ATFM Information Support System (ATFM-ISS), which monitors traffic demand in the Bangkok ACC Sectors in the form of Occupancy Count, number of aircraft in sector within a certain time period as well as traffic demand at major airports in Thailand. Such system along with associated tools and procedures have been deployed to manage air traffic during major planned disruptions such as runway maintenance at Suvarnabhumi Airport in June – July 2012 and management of major runway excursion in September 2013.

2.4 Moreover, Thailand has also been developing CDM/ATFM Collaborative Concept with Hong Kong, China and Singapore, in addition to participating in APEC Air Traffic Management Emissions Reduction Project with Indonesia, Malaysia and the United States.

2.5 Throughout Thailand's experience in deploying CDM/ATFM procedure, capacity units continue to be a major challenge. Given APANPIRG Conclusion 24/13, it is suggested that the ATFM Steering Group provide guidance to States in respect to unit of capacity to be reported to Asia/Pacific Regional Office by May 2014.

### Airport Capacity

2.6 While it is arguable that airport capacity may be more developed and assessed, especially where IATA Slot Coordination process are in place such as Bangkok Suvarnabhumi Airport, Hong Kong International Airport and Singapore Changi Airport, scope of airport capacity assessment may need to be clarified.

2.7 While AEROTHAI as ANSP in the Thai Airspace has some experiences in conducting capacity assessment at major airports, assumptions in such capacity assessment need to be clarified.

For example, capacity assessment for Phuket International Airport assuming no aircraft stand or taxi way bottleneck may not be fully applicable due to presence of bottleneck on ground surface.

2.8 Therefore, it is suggested that the ATFM Steering Group provide some guidance to Asia/Pacific States in respect to scope of airport capacity assessment to be conducted and adjusted.

Sector Capacity

2.9 In contrast to airport capacity, ATC sector capacity units may be more diverse. Sector Capacity Assessment conducted for Bangkok ACC sectors advises sector capacity in terms of hourly entry count, number of flights entering a sector in 60 minutes period.

2.10 Based on further ATFM study and guidance from Doc 9971, it appears that the 60-minute entry count capacity may be elementary entry count capacity unit. In reality, ANSPs may be applying the entry count capacity in time intervals of 15-30 minutes. As an example, a sector with hourly entry count of 30 aircraft / 60 minutes may be monitored as 10 aircraft entry per 20 minutes or 15 aircraft entry per 30 minutes to ensure smooth traffic flow.

2.11 Moreover, certain advanced en-route ACC sectors in European airspace may have been monitoring traffic in terms of occupancy count, number of aircraft within airspace concerned in a time interval. It was suggested that deployment of such occupancy count capacity monitoring requires accurate traffic demand data hours ahead of operations, typically enabled by surveillance data exchange within EUROCONTROL airspace. Such surveillance data exchange is yet to be commonplace in Asia/Pacific region, albeit surveillance data exchange is a major component of the ICAO Asia/Pacific Seamless ATM Plan.

2.12 Throughout Thailand's use of both Occupancy Count capacity and Entry Count capacity, it is found that without integration with sufficient surveillance update to flight progress, Occupancy Count in sectors maybe inaccurate to the extent that may reduce credibility of ATFM implementation solely based on Occupancy Count.

2.13 Moreover, Entry Count Capacity maybe sufficient in anticipating traffic congestion on an airspace sector in strategic phase of ATFM operations. As such, Thailand has been deploying Entry Count Capacity in evaluating expected traffic congestion in Bangkok ACC sectors based on draft schedule provided by Thailand Slot Coordinator.

2.14 Due to varying units of sector capacity being available and applicable for various use, it is suggested that the ATFM Steering Group provide guidance to States in respect to unit of airspace capacity to be reported in accordance to APANPIRG Conclusion 24/13 to ensure common and harmonized ATFM implementation throughout the region.

**3. ACTIONS BY THE MEETING**

3.1 The meeting are invited to:

- a) note information presented in this WP;
- b) discuss proposal to provide clarification to States on scope of airport capacity assessment in accordance to APANPIRG Conclusion 24/13,
- c) discuss proposal to provide guidance to States on units of airspace capacity to be submitted in accordance to APANPIRG Conclusion 24/13; and,
- d) discuss any relevant matters as appropriate.

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