International Civil Aviation Organization

The Third Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/3)

Singapore, 10 – 14 March 2014

Agenda Item 5:   Development of Regional ATFM Framework

TRAINING CURRICULUM FOR ATFM FLOW MANAGEMENT POSITION PERSONNEL

(Presented by Thailand)

SUMMARY

This paper presents Thailand's training curriculum for ATFM Flow Management Position (FMP) personnel in draft form and the need to integrate relevant training curriculum into the Interim Framework for Collaborative ATFM and Asia-Pacific Framework for Collaborative ATFM.

1. **INTRODUCTION**

1.1   The Asia-Pacific region has been experiencing rapid traffic growth as a part of economic development. For illustrative purposes, Thailand has been experiencing 12-16 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, the ATFM/SG/2 meeting in Hong Kong, China in September-October 2013 made the decision to form the ATFM Specialist Team of experienced ATM/ATFM specialist and other stakeholders to develop the Interim Framework for Collaborative ATFM with the goal for consideration at APANPIRG/25 and the Asia Pacific Regional Framework for Collaborative ATFM.

2.   DISCUSSION

2.1   While regional CDM/ATFM development continued, Thailand continued to experience traffic increase to such extent that various sectors in the Bangkok ACC would become saturated during peak hours by a margin of 20-30%. Fortunately, saturated sectors currently service traffic mostly originating from airports within the Bangkok FIR.

2.2   In response to ACC sector saturation, Thailand is planning to implement several capacity enhancement initiatives to be outlined in another Information Paper, which includes introduction of new ATS system and other initiatives. However, it is expected that implementation of those initiatives will take some time and transition effort required.

2.3   In order to address such transition and enable sustainable air traffic growth, Thailand secured budget to implement ATM Network Management Centre (ATM NMC) comprising expanded Air Traffic Flow Management Unit (ATFMU) equipped with ATFM automation, new Airspace Management Cell (AMC) to coordinate airspace and conditional routes in accordance to Flexible Use of Airspace concept, supported by information management unit.

2.4   It is planned that the ATM NMC would begin partial Operational Trial in mid-2015 with expanded ATFMU, information management unit and initial AMC established to address rapid traffic growth and enable smooth transition to new ATS system.

2.5   In preparation for establishment of expanded ATFMU and initial AMC, which is expected to initially share staff, training curriculum topics in draft form have been developed with presentation in **Attachment 1**.

2.6   The training curriculum topics have been presented during EU-ASEAN Air Transport Integration Project (EU-AATIP) ATFM Workshop in Chiang Mai, Thailand on 18 – 20 February 2014 as a part of cooperation between the European Union (EU) and Association of South-East Asia Nations (ASEAN) to establish ASEAN Single Aviation Market in support of establishment of ASEAN Economic Community in 2015. It was agreed that the curriculum would be further developed with support of EU-AATIP project.

2.7   It is expected that the training curriculum developed should complement training guidance in ICAO Manual on Collaborative ATFM (Doc 9971). Also, it is suggested that when the training curriculum matures, its content should be integrated into the Interim Framework for Collaborative ATFM and/or the Asia-Pacific Regional Framework for Collaborative ATFM to ensure readiness of human resources on Collaborative ATFM operations.

3.   ACTIONS BY THE MEETING

3.1   The meeting are invited to:

   a)   note information presented in this paper;

   b)   note training curriculum topics for ATFM Flow Management Position (FMP) Personnel; and,

   c)   note the need to adapt and integrate training curriculum topics for ATFM FMP Personnel into the Interim Framework for Collaborative ATFM and the Asia Pacific Regional Framework for Collaborative ATFM as the training curriculum matures.

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Training Curriculum for ATFM FMPs

ICAO ATFM/SG/3

10 – 14 March 2014

Training Curriculum for ATFM FMPs
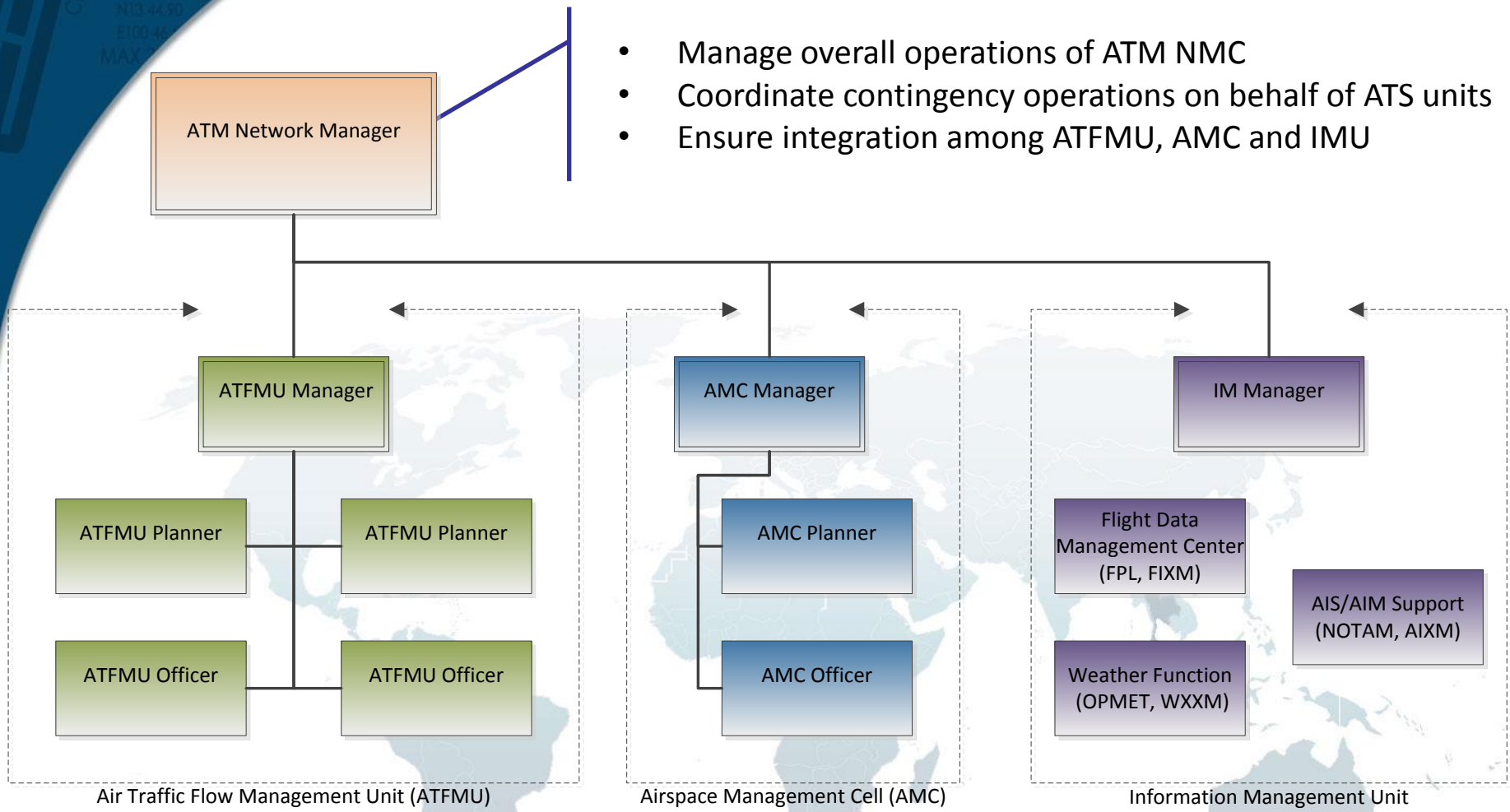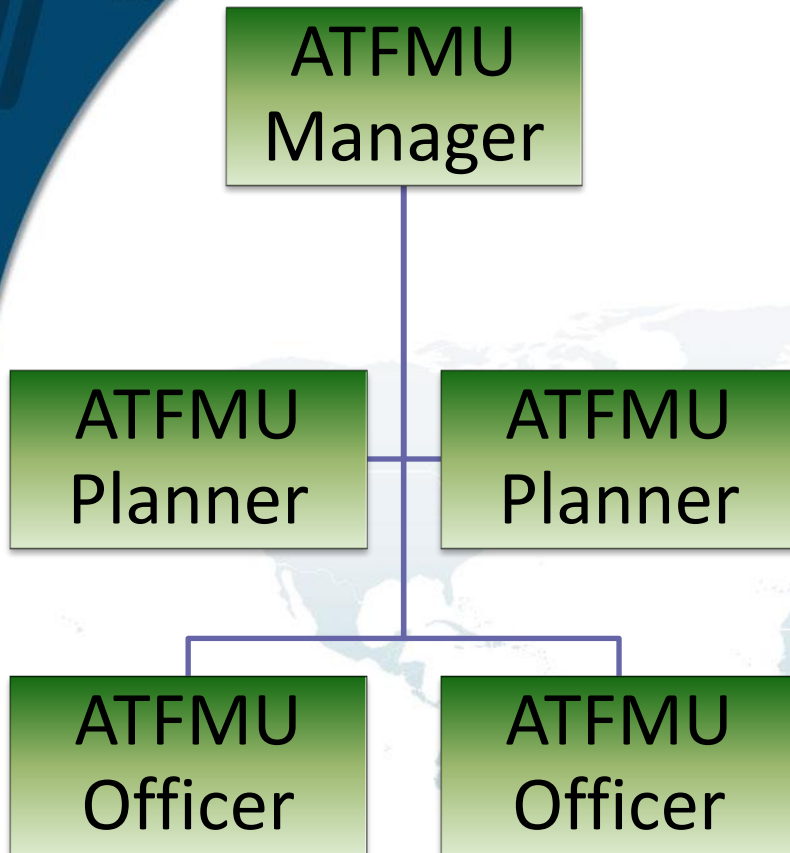
ATM Network Management Center (ATM NMC)

- Manage overall operations of ATM NMC
- Coordinate contingency operations on behalf of ATS units
- Ensure integration among ATFMU, AMC and IMU

ATM Network Manager

ATFMU Manager

- ATFMU Planner
- ATFMU Planner
- ATFMU Officer
- ATFMU Officer

Air Traffic Flow Management Unit (ATFMU)

AMC Manager

- AMC Planner
- AMC Officer

Airspace Management Cell (AMC)

IM Manager

- Flight Data Management Center (FPL, FIXM)
- AIS/AIM Support (NOTAM, AIXM)
- Weather Function (OPMET, WXXM)

Information Management Unit

Air Traffic Flow Management Unit (ATFMU)

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        │   ATFMU     │
        │   Manager   │
        └──────┬──────┘
       ┌───────┴───────┐
┌──────┴──────┐ ┌──────┴──────┐
│   ATFMU     │ │   ATFMU     │
│   Planner   │ │   Planner   │
└──────┬──────┘ └──────┬──────┘
┌──────┴──────┐ ┌──────┴──────┐
│   ATFMU     │ │   ATFMU     │
│   Officer   │ │   Officer   │
└─────────────┘ └─────────────┘
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- **ATFMU Manager**
  – Plan and coordinate capacity adjustment for next day's operation
  – Plan and coordinate ATFM Daily Plan for the next day's operation
  – Manage proper execution of ATFM Measures on day of operation based on ATFM Daily Plan

- **ATFMU Planner**
  – Coordinate tactical capacity adjustment on ATM resources
  – Monitor and execute ATFM Measure on day of operation as required based on ATFM Daily Plan

- **ATFMU Officer**
  – Ensure proper integration of traffic demand inputs
  – Ensure proper configuration of ATFM automation support systems

Airspace Management Cell (AMC)

AMC
Manager

AMC
Planner

AMC
Officer
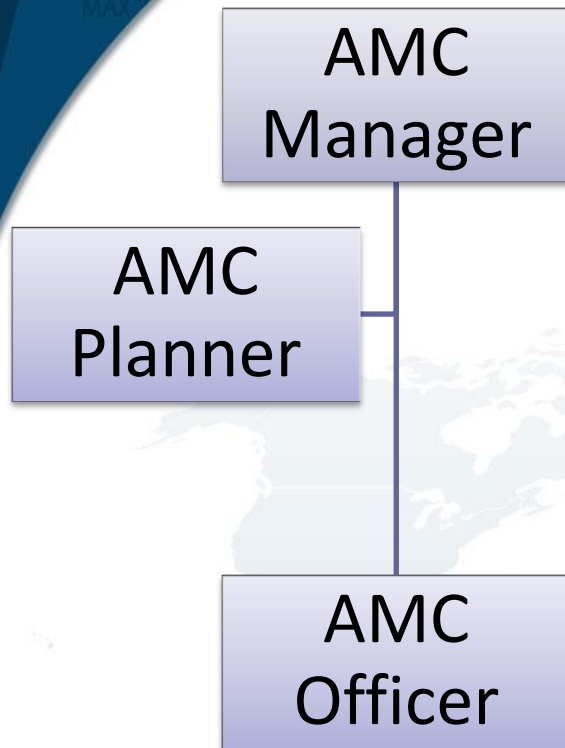
- **AMC Manager**
  - Negotiate pre-tactical Conditional Routes or airspace requests based on traffic demand prediction

- **AMC Planner**
  - Analyze traffic demand prediction to anticipate special Conditional Routes or airspace requests
  - Coordinate Airspace Use Plan (AUP) and relevant updates with involved parties

- **AMC Officer**
  - Ensure proper configuration of AMC automation support systems e.g. airspace booking system
  - Prepare Airspace Use Plan (AUP) and relevant updates

ATM NMC Staff Preparation

- Recruit & Train ATFMU/AMC Officer
  - Air Traffic Control Officers (Aerodrome, Approach or Area Rating)
  - Other current AEROTHAI Staff (engineering background)
  - New recruits
- Develop "BOBCAT/ATFMU Officer" into ATFMU/AMC Planner
- Develop ATFMU/AMC Planner into ATFMU/AMC Manager
- Develop ATFMU/AMC Manager into ATM Network Manager

ATM NMC Training Curriculum

- Recruit & Train ATFMU/AMC Officer – ATCOs
    - ICAO Manual on Collaborative ATFM (Doc 9971)
    - Airspace Organization & Management (EUROCONTROL ASM-ASM)
    - Slot Coordination in Thailand
    - MET for ATM Operations
    - CNS/ATM Training
    - BOBCAT Operations – Officer
    - ATFM Automation System – Officer

- Develop "BOBCAT/ATFMU Officer" into ATFMU/AMC Planner
- Develop ATFMU/AMC Planner into ATFMU/AMC Manager
- Develop ATFMU/AMC Manager into ATM Network Manager

ATM NMC Training Curriculum

- Recruit & Train ATFMU/AMC Officer –Engineers
  - ATFMU/AMC Officer Curriculum – ATCOs
  - Aviation English
  - Air Traffic Services (Annex 11)
  - Basic Aerodrome Control Service (รวม Simulation)
  - Basic Approach Control Service (รวม Simulation)
  - Basic Area Control Service (รวม Simulation)
  - Intro to Network Operations
  - Aeronautical Information Services (Annex 15)
  - Flight Plan
  - Aeronautical Telecommunications (Annex 10 Volume II)
  - Rule of the Air (Annex 2)
- Develop "BOBCAT/ATFMU Officer" into ATFMU/AMC Planner
- Develop ATFMU/AMC Planner into ATFMU/AMC Manager
- Develop ATFMU/AMC Manager into ATM Network Manager

ATM NMC Training Curriculum

- **Recruit &Train new ATFMU/AMC Officer – new recruits**
  - ATFMU/AMC Officer Curriculum –Engineers
  - ATS Electronics Personnel Training (Basic CNS)

- **Develop "BOBCAT/ATFMU Officer" into ATFMU/AMC Planner**

- **Develop ATFMU/AMC Planner into ATFMU/AMC Manager**

- **Develop ATFMU/AMC Manager into ATM Network Manager**

- Recruit & Train ATFMU/AMC Officer
- Develop "BOBCAT/ATFMU Officer" into ATFMU/AMC Planner
  - Introduction to ATFCM (EUROCONTROL ASM-ATFCM)
  - Airspace Organization & Management (EUROCONTROL ASM-ASM)
  - Civil / Military ATM Coordination (EUROCONTROL GEN-CIV/MIL)
  - Intro to Airline Operations: Flight Planning and Flight Operations
  - Flight Efficiency : Re-routing and Fuel Costs
  - Slot Coordination in Thailand
  - MET for ATM Operations
  - Basic PANS/OPS
  - BOBCAT Operations – Planner
  - ATFM Automation Systems – Planner

- Develop ATFMU/AMC Planner into ATFMU/AMC Manager
- Develop ATFMU/AMC Manager into ATM Network Manager

ATM NMC Training Curriculum

- Recruit & Train ATFMU/AMC Officer
- Develop "BOBCAT/ATFMU Officer" into ATFMU/AMC Planner
- Develop ATFMU/AMC Planner into ATFMU/AMC Manager
  - Flow Management Position – Module 2 (EUROCONTROL)
  - Network Capacity Planning (EUROCONTROL ASM-CAP)
  - Enhanced Civil/Military Coordination (EUROCONTROL ASM-FUA)
  - Airport Collaborative Decision Making (EUROCONTROL APT-ACDM)
  - PBN Airspace Design
  - BOBCAT Operations – Manager
  - ATFM Automation System – Manager

- Develop ATFMU/AMC Manager into ATM Network Manager

ATM NMC Training Curriculum

- Recruit & Train ATFMU/AMC Officer
- Develop "BOBCAT/ATFMU Officer" into ATFMU/AMC Planner
- Develop ATFMU/AMC Planner into ATFMU/AMC Manager
- Develop ATFMU/AMC Manager into ATM Network Manager
  - Flow Management Position – Module 3 (EUROCONTROL)
  - Advanced Airline Operations
  - Advanced Airport Operations
  - AIS / AIM Operations Training

DISCUSSION