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## ASSEMBLY — 39TH SESSION

### TECHNICAL COMMISSION

#### Agenda Item 36: Aviation safety and air navigation implementation support

#### **CHINA'S ACTIVE ROLE IN PROMOTING CROSS-BORDER ATFM DEVELOPMENT IN THE ASIA-PACIFIC REGION**

(Presented by the People's Republic of China)

#### **EXECUTIVE SUMMARY**

The paper introduces CAAC's thoughts on promoting the development of cross-border air traffic flow management (ATFM) in a systematic way in the Asia-Pacific region. As the benefits of ATFM in the Asia-Pacific region have become increasingly apparent with the progress of cross-border ATFM, there has been a wide agreement among Asia-Pacific countries on the need to actively promote cross-border ATFM in the region. To conduct systematic researches on ATFM in the Asia-Pacific region and promote the ATFM development in the region based on a solid foundation, will facilitate the scientific and sustainable development of ATFM in the region. The paper puts forward suggestions and approaches for the scientific and sustainable development of cross-border ATFM in the Asia-Pacific region, covering the collaborative decision-making platform, the ATFM operating rules, ATFM data sharing, ATFM process, ATFM technology, ATFM concepts, ATFM tools, and the collaboration mode.

<i>Strategic Objectives:</i>	This paper relates to the Safety and Air Navigation Capacity and Efficiency Strategic Objectives.
<i>Financial implications:</i>	
<i>References:</i>	

<sup>1</sup> English and Chinese versions provided by the People's Republic of China.

## 1. INTRODUCTION

1.1 In recent years, the International Civil Aviation Organization (ICAO) has made outstanding achievements in promoting cross-border ATFM in the Asia-Pacific region. As the benefits of ATFM in the Asia-Pacific region have become increasingly apparent with the progress of cross-border ATFM, there has been a wide agreement among Asia-Pacific countries on the need to actively promote cross-border ATFM in the region.

1.2 ICAO has advanced the work of the Asia/Pacific ATFM Steering Group and the ATFM Information Requirements Small Working Group, and ATFM operational trials in the Asia and Pacific region, contributing to enhanced ATFM cooperation and development in the region. On June 29, 2015, 11 countries and regions, including China, Singapore, Thailand, Hong Kong China, and Malaysia, took the lead in launching ATFM operational trials, which ushered in a rapid development in the operational cross-border ATFM in the Asia-Pacific region.

1.3 The lack of a clear-cut development direction, common development goals, and harmonized development, will not only negatively affect the ATFM integration among countries and regions, but also lead to a huge waste. Therefore, in the early stage of cross-border ATFM development in the Asia-Pacific region, to conduct systematic researches on ATFM in the region and promote ATFM development based on a solid foundation, will facilitate the scientific and sustainable development of ATFM in the region.

## 2. DISCUSSION

### **Collaborative decision-making platform**

2.1 China's air traffic management authority has been committed to promoting the development of a collaborative decision-making platform in the Asia-Pacific region. At the meeting of ICAO ATFM Steering Group in March 2014, China was the first to propose building such a platform. At subsequent meeting of the Steering Group, China's air traffic management authority further put forward a detailed plan for the platform development.

2.2 In the operational mode of distributed multi-nodal ATFM in the Asia-Pacific region, participants need to exchange information and decisions with external nodes while operating independently inside each node. However, under the existing conceptual framework, there is no interactive decision-making mechanism and interactive platform. The development of a collaborative decision-making platform for ATFM in the Asia-Pacific region will provide a strong support for and promote the sustainable development of cross-border ATFM in this area.

### **ATFM operating rules**

2.3 With the participation of different Asia-Pacific countries and regions in the cross-border ATFM system, in order to unite all participating parties in a proper way, clarify their respective rights and obligations, and establish a practicable process and a collaborative decision-making mechanism, there is a need to have in place a complete set of operating rules to support the smooth running of the whole system.

2.4 During the operational trials of distributed multi-nodal ATFM in the Asia-Pacific region, China and other countries jointly carried out researches on the operating rules applicable for the cross-border ATFM development in the region. With the progress of such operational trials, there emerged a

common demand among all parties for more simplified, clarified and efficient operating rules. All parties of the ATFM operational trials have validated and improved the rules through continuous practice and thus advanced the development of cross-border ATFM in the region.

### **ATFM information exchange and sharing**

2.5 The matching of capacity and flow is the core element of ATFM, which requires sufficient data as support. Take flow forecast as an example. The ability to predict flight delays has been one of the key factors and challenges affecting the quality of flow forecasts. Participating parties are able to learn time C and time T of other parties through data sharing, which will greatly improve the accuracy of flow forecasts, and lay an important foundation for flow and capacity balance.

2.6 Advocated by China's air traffic control authority, at the fifth meeting of the Asia/Pacific ATFM Steering Group in 2015, ICAO officially approved the establishment of an ATFM information requirements small working group in the Asia-Pacific region led by China's air traffic control authority. Countries and regions such as India, Japan, Thailand, Singapore, Indonesia and Hong Kong China applied to join the group. The working group will conduct in-depth researches on appropriate information-sharing solutions based on the operational features of ATFM in the Asia-Pacific region, and actively promote the exchange and sharing of cross-border ATFM information in the region.

### **ATFM process**

2.7 The operational mode of distributed multi-nodal ATFM in the Asia-Pacific region provides a good operational environment for the tactical phase ATFM. However, this conceptual framework does not offer enough support for the strategic or pre-tactical phase ATFM. Currently, the cross-border ATFM researches and trials in the Asia-Pacific region are concentrating on the tactical phase. It is practical to use the tactical phase ATFM, which has been chosen as the entry point for the early stage of cross-border ATFM development in the Asia-Pacific region, to tackle the major problems faced by the region. .

2.8 From the perspective of long-term development of ATFM in the Asia-Pacific region, the strategic, pre-tactical and tactical phases are indispensable parts of the ATFM process. An ATFM mode that pays more attention to parts instead of the whole is not good for the sustainable development of cross-border ATFM. Therefore, to develop a cross-border ATFM system which incorporates all ATFM phases is fundamental to the systematic development of ATFM.

### **ATFM technology**

2.9 Ground Delay Program (GDP) is the focus of current efforts on cross-border ATFM research and advancement in the Asia-Pacific region. The method has been validated by the operational trials as a practical way to implement cross-border ATFM. However, the problems facing the Asia-Pacific region are not limited to airport or terminal area congestions, nor all airports have the capacity to implement GDP. Therefore, the development of diversified flow management strategies and technology is the basis for promoting the participation of all Asia-Pacific countries and regions in cross-border ATFM.

2.10 Thanks to the great efforts of CAAC, the Airspace Flow Program (AFP) has been included in the second phase of Asia-Pacific ATFM operational trials. Meanwhile, a consolidated and reasonable use of airborne holding, ground stop and the relatively simple MIT will bolster the cross-border ATFM technology in the entire Asia-Pacific region.

### **Concepts of ATFM**

2.11 The concept of distributed multi-nodal ATFM, which provides an environment for each participating node to equally participate in cross-border ATFM, is a key conceptual basis for the current practices of cross-border ATFM in the Asia-Pacific region. On the basis of this concept, the current operational trials in the region could be smoothly implemented and advanced.

2.12 As the number of participants in the Asia-Pacific cross-border ATFM gradually increases, the support of the existing concept for the large and complex range of nodes has become inadequate. Therefore, CAAC raised the concept of “distributed node cluster” on the basis of the existing concept, to further provide an effective support for the long-term development of cross-border ATFM in the whole Asia-pacific region.

2.13 “Distributed node cluster” is formed by nodes with strong interdependence in ATFM. Depending on the scale of ATFM demand, ATFM programs of small scale can be solved inside the node cluster, while those of large scale can be solved through collaboration between node clusters, so as to avoid low efficiency due to the involvement of too many dispersed nodes in collaborative decision-making at the same time, and to develop a more systematic, integrated and sophisticated cross-border ATFM approach in the region.

### **ATFM tools**

2.14 Capacity-flow balance is the core element of ATFM. Sound auxiliary tools are needed to support and complete the huge amount of ATFM work.

2.15 At present, most of Asia-Pacific countries and regions concentrate their ATFM efforts in their own countries and regions, so the development of ATFM tools are more targeted at the ATFM development needs in their own countries. With the progress of cross-border ATFM, integrated ATFM tools which can accommodate ATFM needs at both domestic and international levels will become the direction of future development.

### **Collaboration mode**

2.16 CDM is the prerequisite and foundation for ATFM development. There has been a broad agreement on collaboration based on ANSPs, AOs and AUs among the Asia-Pacific countries and regions. Collaboration between stakeholders with common situational awareness is an enabler for improving ATFM efficiency, optimizing resource allocation, and best satisfying the demands of all parties.

2.17 The scope of CDM will gradually expand along with the development of cross-border ATFM in the Asia-Pacific region. Take the current ATFM operational trials in region as an example. Sectors such as meteorological services have not participated directly in CDM. With the progress of the Asia-Pacific cross-border ATFM process, the involvement of more sectors will become a feature of the all-round collaboration mode.