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ASIA AND PACIFIC REGION**

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**AGENDA ITEM 3: AVIATION SAFETY AND
AIR NAVIGATION**

**TRANSITION FROM AERONAUTICAL INFORMATION
SERVICES (AIS) TO AERONAUTICAL INFORMATION
MANAGEMENT (AIM) IN HONG KONG, CHINA**

(Presented by Hong Kong, China)

INFORMATION PAPER

SUMMARY

Aeronautical Information Management (AIM) has been recognized by ICAO to be one of the key elements in the Global Air Traffic Management (ATM) Operational Concept. Aeronautical information is no longer limited to pre-flight briefing and has become vital to all components of the ATM systems for all phases of flight. With widespread application of advanced technology in modern aircraft and ATM systems, digital data could enhance ATM operations that could in turn, enable ANSP to provide air navigation services in a more efficient and expeditious way.

This paper presents the roadmap and progress of transition from AIS to AIM in Hong Kong, China and the challenges encountered in the process.

TRANSITION FROM AERONAUTICAL INFORMATION SERVICES (AIS) TO AERONAUTICAL INFORMATION MANAGEMENT (AIM) IN HONG KONG, CHINA

1. INTRODUCTION

1.1 Aeronautical Information Management (AIM) has been recognized by International Civil Aviation Organization (ICAO) to be one of the key elements in the Global Air Traffic Management (ATM) Operational Concept. Contracting States are aware of the change of Aeronautical Information Service (AIS) from product-centric to data-centric. In 2009, ICAO published the “Roadmap for the Transition from AIS to AIM”. According to the Roadmap, the AIS-AIM Transition consists of three phases, i.e. Phase 1 - Consolidation, Phase 2 - Going digital and Phase 3 - Information management. As reported in the 12th meeting of the ICAO AIS–AIM Implementation Task Force (AAITF/12) held in June 2017, in Asia/Pacific Region, overall regional implementation of Phase 1 and Phase 2 are 71 % and 34% respectively.

1.2 All along, Hong Kong, China has been actively participating in various AIS-AIM global and regional forums such as AIM Implementation Task Force to keep abreast of the latest development of AIM transition progress and share our experience. In December 2015, the new Aeronautical Information Management System (AIMS) of the Civil Aviation Department (CAD), Hong Kong, China was successfully commissioned in the new Aeronautical Information Management Centre (AIMC), which marked a milestone of our transition from AIS to AIM. Since then, the operations in AIMC have been running smoothly.

1.3 In this paper, Hong Kong, China would like to share the experience of the AIS-AIM implementation and the challenges ahead.

2. DISCUSSION

Roadmap and progress of AIS to AIM Transition in Hong Kong, China

2.1 Hong Kong, China has fully completed all elements in Phase 1 and 70% of the elements in Phase 2. The next steps for Hong Kong, China to achieve the targets set out in the roadmap are the production of Electronic AIP (e-AIP) in Phase 2 and upgrading infrastructure to support Phase 3.

2.2 Phase 1 concerns mainly quality requirements, AIRAC and ICAO SARPS adherence, and World Geodetic System-1984 implementation. As an established AIS, elements related to adherence to ICAO SARPS have been fully complied for a long time. With regard to the quality requirements, our AIMC has been certified to meet ISO 9001 Quality Standard since 2007.

2.3 The implementation of the new AIMS has proven to be beneficial in terms of flight plan management, NOTAM management as well as presentation of aeronautical information. It not only enhances the accuracy and efficiency in managing aeronautical data, but also contributes positively to the environment by reducing paper usage. The transition to AIM paves the way to a better ATM operating environment and enables Hong Kong, China to better contribute to the regional aviation development.

Challenges ahead

2.4 Looking forward, Hong Kong, China would like to share the experience on a few specific aspects and the strategy to overcome existing and anticipated challenges.

Establishment of Electronic Terrain and Obstacle Data (eTOD)

2.5 During Phase 2 of the transition to AIM, the main focus is on the establishment of data-driven processes for the production of aeronautical information in all States, encouraging the use of computer technology or digital communications and introducing digital data from databases in their production processes. With the implementation of AIM in Hong Kong, China, all paper-based data has been digitalized and stored in accordance with the Aeronautical Information Conceptual Model (AICM) in order to be managed and distributed in the Aeronautical Information Exchange Model (AIXM). In order to ensure compliance with the relevant ICAO requirements on the establishment of eTOD, an airborne Light Detection and Ranging (LiDAR) survey has been conducted. Considering some part of the Area 2 (terminal control area) is outside the territory, Hong Kong, China would also endeavor to pursue the exchange of data with relevant States so that a more complete set of eTOD data can be achieved.

Unique Identifiers

2.6 In support of the use of the ICARD system as part of the AIS-AIM transition, effort has been made to update the 5 Letter Name Codes (5LNC) database with all the existing waypoints which have been published and in use for many years within Hong Kong Flight Information Region (FIR). Considering that resolving the duplicated 5LNC issue requires extensive discussion within and among States, undoubtedly close liaison and support from ICAO would be essential. The requirement that waypoint names shall be unique to avoid duplication worldwide as reflected in Annex 11 is apprehended. However, considering the scope and complexity, a more practical solution may be required. In this regard, Hong Kong, China would support a more pragmatic approach and focus on resolving the issue within the region.

Production of Electronic AIP (e-AIP)

2.7 Existing data available in paper form AIP works fine in the traditional AIS environment. However, based on the AIM concept, Hong Kong, China has committed to the implementation of AIMS in order to realise an e-AIP. The production of e-AIP requires the establishment of data-driven processes which demands more stringent requirements for data so that they could be input into the system in designated format for further processing. To ensure quality of data, unambiguous clarification by data originators is required. As data or information in the AIP is owned by originators from different entities, the process of clarifications and confirmations of data integrity is tedious and time consuming. Data integrity is also important for aeronautical information to go digital. Agreement has to be made with data originators to ensure the data is in order and be traceable. To speed up the process of producing the e-AIP, CAD has engaged data originators since the early stage.

2.8 Inputting and acceptance of data into the AIM system is also time consuming. In view of the use of the designated format in the system, the quantity and integrity of the data have been tremendously increased when compared with the previous paper environment. More time and effort were required for manual input of data and system acceptance to ensure the integrity of the database, in particular in the initial creation of e-AIP. In this regard, a dedicated team of personnel has been established to take care of this process.

Information Management

2.9 For Phase 3, the elements include aeronautical data exchange, aeronautical information briefing, communication networks, training, agreements with data originators, interoperability with meteorological products, electronic aeronautical charts and digital NOTAM. Steps will be taken to enable future AIM functions to address the new requirements that will be needed to implement the Global Air Traffic Management Operational Concept in a net-centric information environment. Training is an essential element for the successful implementation of the new AIMS. As such, Hong Kong, China has provided well-structured training to frontline staff to

ensure they would acquire the required knowledge and skills for the operation of the new AIMS. Further training would be arranged to equip staff to operate the AIMS at different levels (e.g. frontline operations, data management) as necessary.

2.10 Currently, CAD adopts AIXM 4.5 as the model to provide AIM products. In order to fulfill the requirements in Phase 3, upgrading to AIXM 5.1 which requires more stringent and sophisticated data for production of digital NOTAM and charts would be required. At this stage, although AIXM 5.1 is still in the testing process and date of commissioning has not been announced, Hong Kong, China has planned to upgrade the system to support AIMX 5.1. Apart from operational aspects, we would very much rely on the manufacturers to develop, test and maintain the equipment in a more advanced and reliable level.

2.11 Successful implementation of AIM requires collaboration from all AIM providers as it involves automatic data exchange and that could only happen if the systems used by various AIM providers share the same capability and are compatible. In addition, reliable, extensive and expeditious communication networks will be the vital elements to support the successful implementation of Phase 3.

3. CONCLUSION

3.1 Most of the States in this region have fully completed Phase 1 of the AIS-AIM transition. However, the hurdles for phase 2 and 3 are challenging. It is recommended that States/Administrations should liaise closely with ICAO to seek their opinion and work with other States/Administrations that have successfully implemented AIM to share their experience. With the gradual transition from AIS to AIM, Hong Kong, China has seen the benefits of implementing AIM and would be pleased to continue contributing.

4. ACTION BY THE CONFERENCE

4.1 The Conference is invited to:

- a) note the information contained in this paper;
- b) share the major challenges of transition from AIS to AIM as well as the benefits of AIM implementation; and
- c) discuss any relevant matter as appropriate.

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