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ASSEMBLY — 40TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other issues to be considered by the Technical Commission

IMPLEMENTATION OF MODERNIZATION STRATEGY OF AIR TRAFFIC MANAGEMENT IN CHINA

(Presented by China)

REVISION NO. 1

EXECUTIVE SUMMARY

This paper presents an introduction to the implementation of the modernization strategy of air traffic management in China, including efforts to improve the air traffic services, enhance operational support capacity, intensify the application of new technologies and accelerate construction of infrastructure, which are designed to promote the global air navigation system evolving towards the established vision through concrete actions.

Action: The Assembly is invited to take note of the information contained in the paper.

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objectives of Safety, and Air Navigation Capacity and Efficiency.
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<i>Financial implications:</i>	N/A
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<i>References:</i>	Doc 9854 — <i>Global Air Traffic Management Operational Concept</i> Doc 9750 — <i>Global Air Navigation Plan</i>
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¹ English and Chinese versions provided by China.

1. INTRODUCTION

1.1 Based on the unified vision of the global air navigation system and taking into consideration of China's civil aviation reality, Air Traffic Management Bureau of Civil Aviation Administration of China (CAAC) has studied and developed the Civil Aviation ATM Modernization Strategy (CAAMS) on the basis of fully absorbing the technical essentials of the Global Air Navigation Plan (GANP) and aviation system block upgrade (ASBU).

1.2 The CAAMS not only puts forward seven brand new major operational concepts in line with China's reality, including airspace organization and management, flight flow coordination, busy airport operation, trajectory-based operation, multi-model separation management, civil-military joint operation, and performance-based service, but also provides in-depth analysis and overall arrangement for the development of China civil aviation air traffic management from six levels: mission and vision, policies and regulations, overall objectives, service capabilities, infrastructure, and construction projects.

2. ACHIEVEMENTS OVER PAST THREE YEARS

2.1 Improved air traffic control levels: (1) ATS Interfacility Data Communications (AIDC) was implemented. AIDC control handover between Sanya and Hong Kong, Shanghai and Taipei, Guangzhou and Taipei, and 42 pairs of adjacent regions in China were conducted. In terms of the connection with foreign countries, Dalian and Incheon have already implemented AIDC control handover, and Beijing and Ulaanbaatar, Shanghai and Fukuoka, Kunming and Yangon are in the testing stage. (2) Arrival Manager (AMAN) and Departure Manager (DMAN) were boosted. In terms of DMAN, busy areas such as North China, East China, and Central South China have implemented unified release in their respective regions, making airports within their jurisdictions realizing DMAN capability initially. It involves a total of 33 airports, accounted for about 75%. As for AMAN, Shenyang Taoxian and Xi'an Xianyang were equipped with AMAN facilities which are already in service; Urumqi and Changsha are now in trial operation. (3) Wake turbulence separation was optimized. Eight airports in Beijing, Kunming, Chengdu, Xi'an, Chongqing, Guangzhou, Shenzhen and Urumqi have implemented optimized wake turbulence separation in accordance with the *Interim Provisions on Optimizing the Operation Specifications of Air Traffic Control*, which has improved runway throughput and operational efficiency. Research on the new type of classification of wake turbulence separation is underway.

2.2 Integrated development of civil-military air traffic management: (1) Civil-military airspace was optimized. Airspace optimization in Shaanxi, Gansu, Qinghai, Guangxi and Guizhou was finished. By means of exchanging and integrating airspace resources, the overall regularity rate of regional flight operations increased by 11% and regional capacity increased by 15%. (2) The operational mechanism for the integration and development of civil-military operation was reinforced. The Massive Delay Response System (MDRS) of civil-military aviation was promoted in busy areas, and the joint operation plan of civil-military aviation in Beijing Terminal Area was boosted. (3) Training standards for civil-military aviation personnel were unified. The development of the *Training Textbook for Integrated Development of Civil-military Air Traffic Management* was completed.

2.3 Reasonable and rational planning of airspace: (1) The building of national airspace system was invigorated. The development of the *Recommended Program for National Airspace Classification* was completed and the implementation of airspace classification and division was pressed ahead. (2) The top-level design of the route network was released. The development of the *National Civil Aviation Network Planning of Trunk Routes* was completed, and the structure of route network was optimized to improve utilization of airspace. (3) Air corridors were constructed. Guangzhou - Lanzhou

and Shanghai - Lanzhou corridors were built and China - ROK corridor is under initial preparation, so as to improve the airspace structural in key areas. (4) The separated operation of arrival and departure routes was propelled. The arrival and departure routes in the main direction of Urumqi Airport were separated; the operation plan of arrival and departure routes of 12 airports including Wuhan and Haikou were completed; the optimization plan of arrival and departure routes of Shenyang and Changsha were completed, ensuring simple and smooth structures of the terminal areas.

2.4 Flexible and efficient use of airspace: (1) The development of airspace management system was pushed forward. Active support was provided to build the three-tiered national, regional and operational airspace management entities and efforts were made to improve the system. (2) Airspace flexibility was enhanced. Since 2016, 54 new temporary routes have been launched, adding a mileage of 5680 kilometres, and the number of temporary routes has increased by 26% compared with that of 2015, which effectively improved operational efficiency. (3) All-round implementation of PBN operation on routes and flights across China were realized. (4) The structures of ATC control sectors were optimized. ATC sectors in Kunming, Zhengzhou, Ji'nan and Northeast regions were adjusted, and research was carried out to adjust approach sectors in Fuzhou, Lanzhou, Xining, Wuhan, Qingdao and Guangzhou, so as to optimize ATC control sectors in a continuous manner. (5) The single and double tracking route operation mode was improved. The G470 route was optimized, which single track operation was adjusted to parallel double track operation; by means of the route A461 and H10 on the east and west sides of Beijing-Guangzhou route, single track transformation of the route was realized. (6) Airspace usage evaluation mechanism was established. Pre-evaluation mechanism of airspace has been built, and pre-evaluation have already been carried out on the implementation of several major airspace schemes such as Beijing Daxing Airport airspace planning, Beijing-Guangzhou and Shanghai-Kunming corridors development plans, and the Tonglu - Nanxun area route optimization plan.

2.5 Improved operational support capabilities: (1) The means of air traffic control were diversified. 7 sets of command systems for emergency response have been installed and put into operation to ensure the actions during emergency; full coverage of national air traffic control equipment backup was achieved in case of emergency, which has effectively reduced the risk of single system operation; active explorations were made regarding the mutual standby mode between the control center and terminal center. (2) The level of meteorological support was improved. The aviation meteorological service system was improved and the Asian Hazardous Weather Consultation Center was built; the development of the regional numerical forecasting system of the Northeast, Southwest, Northwest, and Xinjiang Air Traffic Management Bureau progressed steadily. (3) The quality of information support was enhanced. Aeronautical information generation platform and China civil aviation Class1 EFB electronic chart application software based on IOS platform was developed, providing services for 30 airlines of China civil aviation; the development of Integrated Flight Plan Processing System Environmental Database was launched, laying a foundation for the integrated processing of national flight plans.

2.6 Accelerated infrastructure construction: (1) Infrastructure construction was spurred. The airspace management center project was completed; other projects such as the construction of civil aviation operation management center, meteorological center, information management center, Beijing Terminal Control Center, Shanghai Terminal Control Center, Wuhan Terminal Control Center, Zhanjiang Terminal Control Center, and Guangzhou Terminal Control Center are proceeding on schedule. (2) Overall layout was made to communication, navigation, and surveillance equipment. The civil aviation communication network project and ADS-B projects in the east areas and west areas are proceeding as planned. (3) Air traffic control project at airports were promoted simultaneously. The air traffic control project in the expansion of Chongqing Airport was completed; six air traffic control projects in the expansion of Beijing Daxing Airport, Haikou Airport and Guilin Airport are going on smoothly; five air traffic control projects of the second runway in Dalian New Airport and Shenyang Airport were initiated.

3. **ACTIONS**

3.1 The assembly is invited to take note of the information contained in this document. China civil aviation will continue to promote the Civil Aviation ATM Modernization Strategy (CAAMS) and work with other countries around the world to towards the unified vision of the Global Air Navigation Plan.

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