



WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE B

Agenda Item 6: Organizational safety issues

6.1: Strategic plan

6.1.1: Vision and overview of the Global Aviation Safety Plan (GASP), 2020-2022 edition

DEVELOPMENT PROGRESS OF CHINA CIVIL AIRCRAFT TRACKING AND SURVEILLANCE SYSTEM

(Presented by the People's Republic of China)

EXECUTIVE SUMMARY

This paper presents China's recent progress on global flight tracking (GFT), which is an important support for the implementation of the *Global Aviation Safety Plan* (GASP, Doc 10004). Related work progress of China's civil aviation includes: development and issuance of the *Roadmap for the Development of Civil Aircraft Tracking and Surveillance System*; development of flight tracking requirements applicable to Chinese aircraft operators; enhancing civil aircraft tracking and surveillance capability of the Civil Aviation Administration of China (CAAC) operational supervision and monitoring center.

Action: The Conference is invited to:

- a) take note of China's recent development progress on GFT; and
- b) recommend ICAO to accelerate the development of policies, specifications and supporting documents relating to GADSS.

1. INTRODUCTION

1.1 The *Global Aviation Safety Plan* (GASP, Doc 1004) is a strategic guidance plan developed by ICAO intended to ensure the priority of civil aviation safety and consistent enhancement of safety. The GASP clarifies the crucial safety enhancement initiatives (SEIs) for achieving the strategic objective - safety of ICAO.

1.2 Global flight tracking (GFT) has become a matter of priority in the global aviation community after Malaysian Airlines flight MH370 losing contact in March, 2014. The existing GASP 2017-2019 explicitly emphasizes GFT as a priority on enhancing safety, and the GASP 2020-2022 draft submitted for discussion also incorporates GFT as the support for implementation of GASP.

¹ Chinese version provided by China.

1.3 The Civil Aviation Administration of China (CAAC) has been attaching great importance to global aircraft tracking and surveillance all the time, and played its role in several ICAO working groups, kept close contact and cooperation with other civil aviation authorities and various stakeholders of the industry in an effort to press ahead with the development of civil aircraft tracking and surveillance system of China.

2. DISCUSSION

2.1 Promoting the implementation of global aircraft tracking and operating surveillance constitutes one of the key tasks of China's civil aviation. In 2015, CAAC set up a steering group of civil aircraft tracking and surveillance system development, taking charge of the implementation of global civil aircraft tracking and operational surveillance.

2.2 The steering group of civil aircraft tracking and surveillance system development formulated the *Roadmap for the Development of Civil Aircraft Tracking and Surveillance System* in 2016 and issued it in 2017. The Roadmap is divided into three phases, i.e. the present stage, the short-term stage and the long-term stage. The objective of present stage is to realize 4D/15 tracking of flights operating in areas other than nine flight information regions (FIRs) out of the eleven ones of China based on incumbent mature technology. The short-term stage (2017-2020) objective is to realize seamless global tracking of flights based on air traffic control (ATC) information and emerging technologies such as ground/satellite-based automatic dependent surveillance — broadcast (ADS-B) and broadband satellite communications. The long-term stage (2021-2025) objective is to put in place a global aircraft tracking system based on proprietary intellectual property rights, and development of relevant standards, so as to provide GFT service for civil aviation both at home and globally.

2.3 Based on the provisions of Standards and Recommended Practices (SARPs) in Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes*, CAAC formulated and issued the *Guidance for the Implementation of Routine Aircraft Tracking and Surveillance for Air Carriers*, which is more stringent than the corresponding requirements of Annex 6. From June to July, CAAC carried out a 45-day regional verification and demonstration pilot for aircraft tracking under normal circumstances involving four of the largest airline companies. The results of verification and demonstration indicated that the participating airline companies all are capable of tracking flights within their operational regions. It should be noted that the chosen operational regions in the verification and demonstration included oceanic operational regions and polar routes (POLAR-3 and POLAR-4). As of the end of 2016, eighteen Chinese transport airlines operating international and regional flights have all completed the supplementary operation certification for 4D/15 tracking, marking the achievement of the present stage objective of the Roadmap.

2.4 In addition, CAAC has established a two-level aircraft tracking and monitoring system, which includes the CAAC operational supervision and control centre, domestic air traffic management operational entities, and domestic transport airlines. The first level is the CAAC operational supervision and control centre; the second level is the domestic air traffic management operational entities and transport airlines. The CAAC operational supervision and control centre is responsible for monitoring the real-time dynamics of all transport flights within its jurisdiction, and in the event of occurrence, the CAAC operational supervision and control centre assumes the responsibilities for collecting information and analysing relevant conditions and addressing it according to the working procedures. An automated system dedicated to aircraft tracking and monitoring was installed in the CAAC operational supervision and control centre in the second quarter of 2018. This automated system can access a variety of data sources including secondary surveillance radar (SSR) ADS-B, aircraft communications addressing and reporting system (ACARS) and aircraft tracking data from third parties, enabling the fusion and handling

of aircraft tracking data and event reporting data. The integrated processing results are presented visually to the staff in charge of flight tracking and monitoring.

2.5 In view of the fact that flight tracking under normal conditions based on incumbent mature technologies has been implemented and incorporated into a continuous safety management system, China Civil Aviation is embarking on the seamless global flight tracking based on emerging technologies including ground/satellite-based ADS-B, broadband satellite communications, etc. Demonstration tests of applying multiple emerging technologies in seamless global flight tracking are currently in process. After the demonstration tests, the tracking performance of the corresponding technologies will be thoroughly analysed and evaluated, which will provide basis for CAAC in the development of corresponding policies, standards, specifications and performance requirements.

2.6 BeiDou Global Navigation Satellite System (GNSS) represents a core component of China's global aircraft tracking system with independent intellectual property rights, and has significant applications in many fields of global flight tracking. CAAC has always firmly pushed forward with the application of the BeiDou GNSS in civil aviation, and has developed corresponding implementation plans: in 2019, the demonstration tests of transport aeroplanes using the BeiDou system to attain global flight tracking capabilities will be achieved; and in 2022, the all transport fleet will be equipped with global flight tracking capabilities based on the BeiDou system.

2.7 China Civil Aviation follows closely the latest developments of automatic distress tracking (ADT) and post-flight positioning and recovery (PFLR), two significant constituents of the GADSS operational concept, and has been an active participant in multiple working groups including ADTR-WG. Since in the GADSS operational concept, some of the policies, requirements and guidance materials for guiding the implementation by national civil aviation authorities are yet to be completed or released. CAAC invites the Conference to recommend ICAO accelerate the development of GADSS, especially the development of policies, specifications and supporting documents regarding ADT among others.

3. CONCLUSION

3.1 Global flight tracking, as an emerging civil aviation safety priority, has become a key aspect and implementation support for achieving the GASP objectives and enhancing safety. CAAC has always been committed to enhancing the global flight tracking capabilities of Chinese operators and improving the corresponding continuous safety management level. At the same time, China Civil Aviation is ready to strengthen in-depth exchanges and cooperation with all parties in global flight tracking, especially in the application of the BeiDou system.

3.2 The Conference is invited to:

- a) take note of China's recent development progress on GFT; and
- b) recommend ICAO accelerate the development of GADSS, especially the development of ADT-related policies, specifications and supporting documents.