International Civil Aviation Organization

AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST SEMINAR AND ELEVENTH MEETING OF AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) STUDY AND IMPLEMENTATION TASK FORCE (ADS-B SITF/11)

Jeju, Republic of Korea, 24-27 April 2012

Agenda Item 6: **Review States' activities and interregional issues on trials and implementation of ADS-B and multilateration**

INTRODUCTION TO AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST (ADS-B) IN CHINA

(Presented by China)

SUMMARY

This information paper presents significant achievements in the studies of ADS-B technology, applications and promotions, policies, standards and equipment access system made by CAAC.

1. Selection of ADS-B Data Link

1. Civil Aviation Administration of China (CAAC) selects 1090MHz ES as air-ground, air-air application data link for the transport and general aviation.

2. Policies and Standards Formulation and Equipment Access System Construction

a) Air Traffic Regulation Office (ATRO) promulgated an Advisory Circular (AC) on "Application Policy of Surveillance Technology of CAAC" (AC-115-TM-2010-01) in 2010.

b) In November 2011, ATRO and Air Traffic Management Bureau(ATMB) issued "Control Operational Procedures on ADS-B" (AC-93-TM-2011-01).

c) Preparation of "Technical Requirements for ADS-B Ground Station Receivers" organized by ATRO will be promulgated as soon as possible.

d) On 8 February 2012, the ATRO issued license for the ADS-B ground station (made by Civil Aviation ATC Technology Equipment Company).

e) Flight Standard Department of CAAC promulgated an Advisory Circular on "ADS-B Application in Flight Operation" (IB-FS-2008-02) in September 2008.

f) Aircraft Airworthiness Department of CAAC published ADS-B airborne equipment MOPS "ADS-B and TIS-B equipment operating on 1090MHz" (CTSO-C166b).

g) Flight Standard Department and Aircraft Airworthiness Department of CAAC promulgated an Advisory Circular on "Airworthiness and Operational Approval of ADS-B Application in Non-Radar Areas via 1090ES"（AC-91-FS/AA-2010-14）in May 2010.

h) In August 2011, the "China Civil Aviation ADS-B Application Expert Seminar" was held in Chengdu, which researched the application and selection of ADS-B data link, general plan and implementation roadmap of ADS-B, the key technique of ADS-B application, the near-term work priorities.

CAAC will continue to produce and promote the relevant technical standards, establish a set of integrated standard system covering operational standard, airborne equipment, aircraft airworthiness. In addition, training and validation approval will be improved in the future.

3. ADS-B Implementation, Validation and Evaluation Project

CAAC gets a lot of experiences by setting up a series of ADS-B Application Validation and Assessment project in TA and GA.

3.1 ADS-B implementation of Transport Aviation

For transport aviation, the ADS-B technology is mainly used for route surveillance.

a) ADS-B Application and Validation Project in ChengDu-JiuZhai Route

The project started in 2006, including two ADS-B ground stations, a set of ADS-B data processing and display system, a set of ADS-B analysis and evaluation system. The whole route was covered by ADS-B. Controllers can get the ADS-B information. The coverage performance and position accuracy were validated, the conclusion of the project shows that ADS-B technology is available in route surveillance.

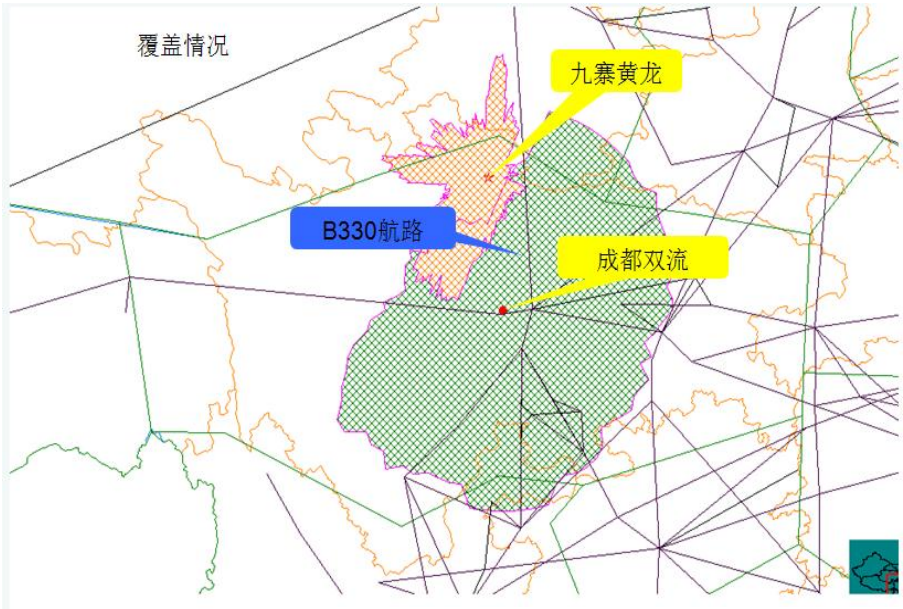

Figure 1 ADS-B coverage in ChengDu-JiuZhai Route

b) Surveillance Project in ChengDu-LaSha Route

The project commenced in 2008, which includes 5 ADS-B ground stations, a set of ATC system, and now it can provide continuous coverage for the whole route via ADS-B, the project has been completed in May 2011. Currently, it is under the phase of operational trail.

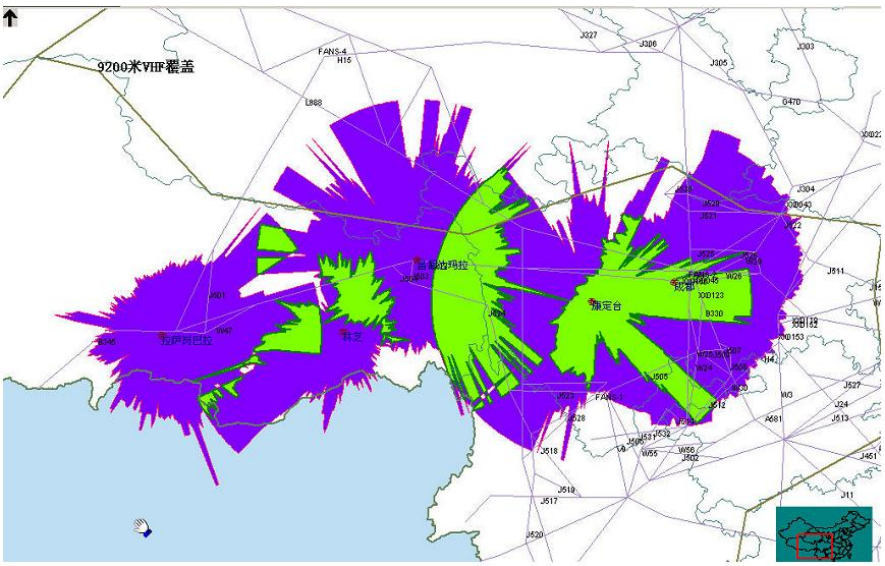

Figure2 ADS-B coverage in ChengDu-LaSha Route

c) Xisha ADS-B Experiment System

The project began at November 2008, which installed a dual redundancy ADS-B ground stations, updated the ATC system in HaiKou Control Center as well. The project strengthened surveillance capability in South China Sea. The ADS-B data has been applied for performance evaluation by HongKong Civil Aviation Department. L642 and M771 routes in Sanya FIR has been commenced operational accessment in June 2011.

d) ADS-B Surveillance Project in LanZhou-YuShu Route

The project commenced in May 2011, the first phase of the project consists of five dual redundancy ADS-B ground stations, which was manufactured by the Second Research Institute of CAAC(CAACSRI). The project realizes ADS-B single surveillance coverage along the whole route.

e) Summary

In the future, more ADS-B route surveillance projects will be implemented in western China and mountain terrains.

3.2 ADS-B Application of General Aviation

Overall, ADS-B application of General Aviation is still in the experimental phase.

a) ADS-B Application in Civil Aviation Flight University of China(CAFU)

As early as 2005, the CAFU initiated ADS-B validation project, and we selected UAT for airborne and ground equipments. The project finished in 2009, six ground stations in sub-college can share the data with the main ADS-B server via campus network, all the training airplanes could be surveillance in real time.

In 2011, CAAC decides to select 1090MHz ES (downlink) as ADS-B air-ground data link. Now, CAFU is committed to research and develop airborne equipment and ground stations based on 1090MHz.

b) Other ADS-B Application Programs

In October 2011, validation of general aircraft work on 1090MHz ES in ChaoYang Airport was conducted successfully.

In November 2011, the Sky-Blue International Aviation Academy initiated trials on 1090MHz ES for training airplane, the objective of this program is to validate the availability of airborne equipment work on 1090MHz ES.

4. Conclusion

CAAC gets a lot of experiences by setting up a series of ADS-B application, validation and assessment projects in transport and general aviation.

After years of application and validation, CAAC has been enhanced the understanding of ADS-B technology. In view of the specific conditions of China, CAAC realizes that the application and implementation of ADS-B are a huge and complex project.

Nowadays, CAAC organizes research institutions and manufacturers to prepare " The ADS-B General Plan and Implementation Solution of CAAC", which focuses on issues as following：

- CAAC ADS-B Application Strategy
- CAAC ADS-B Implementation Planning
- Compass2 Impacts on ADS-B
- Associated Supporting Policies, Standards and Equipment Access System
- ADS-B ground transmission network
- ADS-B ground station Data Sharing

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