

International Civil Aviation Organization

TWELFTH MEETING OF THE SOUTH EAST ASIA AND BAY OF BENGAL SUB-REGIONAL ADS-B IMPLEMENTAITON WORKING GROUP (SEA/BOB ADS-B WG/12)



Guangzhou, China, 08 - 10 November 2016

Agenda Item 3: Review implementation and co-ordination activities and subregional implementation plans

3.1) Progress on ADS-B implementation – South East Asia

ADS-B IMPLEMENTATION IN SOUTH CHINA SEA

(Presented by China)

SUMMARY

This paper presents the ADS-B project in South China Sea to improve the surveillance level of L642 and M771 routes in Sanya FIR. The progress updates and activities of the project are described.

1. INTRODUCTION

In order to enhance the surveillance abilities of the L642 and M771 routes in Sanya FIR, Middle South Regional Air Traffic Management Bureau of China proceeded with the project for ADS-B implementation. Four ADS-B ground stations, one ADS-B data station have been established. The data has been sent to ATC system after its quality and usability evaluated.

2. OVERALL PROGRESS

2.1 ADS-B ground stations

At present, all four ADS-B ground stations have been established. The equipment provider is CETC 28th, a Chinese Manufacturer. Each ground station has two independent channels from antenna to output interface. With high gain Omni-directional antenna, the max detection range is up to 256nm. The coverage of the four ADS-B ground stations is as shown below.



Fig.2 Coverage at the altitude of 10100 meters

2.2 ADS-B data station

National ADS-B information network is composed of first-level data processing centers, second-level data processing centers, data stations and transmission network. Sanya ADS-B data station is an important part of the three-level hierarchy of national ADS-B information network.

In November 2014, Sanya ADS-B data station was installed in Sanya Terminal. The provider is Middle South Regional ATMB, CAAC. Now we are ready to share the ADS-B data with related parties. In fact we are already sharing the data with Hong Kong China.

As shown in Fig. 3, Output data from multiple ADS-B ground stations is received, verified, fused and then sent to ATC systems. The fusion data had been tested in Thales system in Guangzhou ACC, LES system in Sanya Terminal and Telephonics system in Sanya ACC. The results showed that new signals can effectively improve the surveillance level of L642 and M771 routes in Sanya FIR.

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Fig.3 Network of ADS-B data station in Sanya

3. DATA EVALUATION

3.1 The quality and validity of output data from these ADS-B ground stations were evaluated, including the operational performance and the problems discovered during testing.

3.2 During the evaluation, radar tracks from ATC system are used for comparison with ADS-B data.

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Part of the results are shown in Table.1 and Table.2.

No.	Testing Item	Results
1	Delay of messages	Less than 200ms
2	NUC	NUC>=5:
		92% messages
3	Position	100% output;
		Few position jumps
4	Altitude	98% output;
		Few altitude jumps
5	SSR code	84% output;
		Steady value
6	Emergency code SPI	Available
7	Ground speed	95% ouput
8	Continuous update rate	1 second: 93%
		5 second: 96%
9	Callsign	97% ouput;
		Three-letter identifier;
		Steady value
10	Coverage	Steady coverage of the Sanya FIR and the
		two ADS-B routes

Table.2 ADS-B out equipage and version			
1	ADS-B equipped	More than 95% in the ocean area	
2	Version of ADS-B airborne	Version 0 (DO260): 81%	
	equipment	Version 0 (DO260A): 5%	
		Version 0 (DO260B): 14%	
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4. **Application in ATC system**

The ATC systems in Sanya ACC and Guangzhou ACC have been upgraded to support ADS-B inputs. Fig.4 shows the ADS-B dataflow to online and backup ATC systems of Sanya ACC in Haikou.



ACTION BY THE MEETING

5.

The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.