International Civil Aviation Organization

Eighth Meeting of the Surveillance Implementation Coordination Group (SURICG/8)

Bangkok, Thailand, 6 – 9 June 2023

Agenda Item 8: Update on surveillance activities and explore potential cooperation opportunity

AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST (ADS-B) IMPLEMENTATION FOR LOW-FLYING TRAFFIC

(Presented by Hong Kong, China)

SUMMARY

This paper highlights the latest status of ADS-B implementation for low-flying traffic within the territories of Hong Kong, China after the mandate of ADS-B avionics was effective for locally registered low-flying aircraft on 31 January 2023.

1. INTRODUCTION

1.1 Due to the mountainous terrain within Hong Kong, China and location of radars with uptilt antennas, some areas where General Aviation(GA)/helicopters flying at low altitude (e.g. below altitude of 500ft AMSL) with taking off from/landing at helipads and local aircraft/helicopter base could not be covered by existing secondary surveillance radar (SSR) network. The ADS-B ground station network of Hong Kong, China, which was introduced in 2013 with a total of 8 sites, was designed for air traffic surveillance of both en-route and low-flying aircraft. Since then, the Civil Aviation Department (CAD) of Hong Kong, China had worked closely with the local industry for equipping ADS-B avionics in locally registered GA/helicopters.

2. DISCUSSION

2.1 During the design of ADS-B ground station network, the location of ground station sites had been carefully determined based on technical analysis for delivering the best value-for-money setup in meeting the operational requirements of low-level surveillance. To verify the ADS-B low-level surveillance coverage, flight trials were conducted by a helicopter equipped with ADS-B test transponder flying at low altitude (e.g. 500ft AMSL) as far as practicable, and descending at some pre-selected locations by landing at helipads/aircraft base, or performing low-level hovering over waters. Results showed that the low-level coverage of ADS-B is far better than that of SSRs with almost no target drops observed (See Figure 1a and 1b).

2.2 Regarding the ADS-B equipage of low-flying aircraft within Hong Kong, China, mandates were effective on 8 June 2018, which requires forward-fit equipage of DO-260B ADS-B avionics in locally registered low-flying aircraft. For retro-fitting, equipage of DO-260, DO-260A or DO-260B ADS-B avionics was required to be completed by 31 January 2023. As of May 2023, 95%

of operating low-flying aircraft have already been equipped with ADS-B avionics according to the requirements.

2.3 With the full implementation of ADS-B for low-flying traffic, the low-level ADS-B surveillance data has been integrated into the air traffic management system for assisting air traffic controllers in monitoring the traffic. It enhances surveillance capabilities and situation awareness for both air traffic controllers and pilots of low-flying GA/helicopters. Besides, the high update rate and accurate positional data from ADS-B make it very effective in monitoring low-flying GA/helicopters which perform more frequent turning and altitude change. Furthermore, low-level surveillance using ADS-B also facilitates search and rescue operations in locating concerned GA/helicopters, and the recorded ADS-B data could also support subsequent aircraft incident/accident investigation.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the ADS-B implementation for low-flying traffic in Hong Kong, China;

b) consider the benefits of using ADS-B for enhancing low-level surveillance capabilities and situational awareness for ATC and pilots, as well as facilitating search and rescue operations and incident/accident investigation of low-flying General Aviation /helicopters; and

c) discuss any relevant matter as appropriate.

Figure 1a & 1b : Flight Trial of ADS-B Low Level Surveillance Coverage

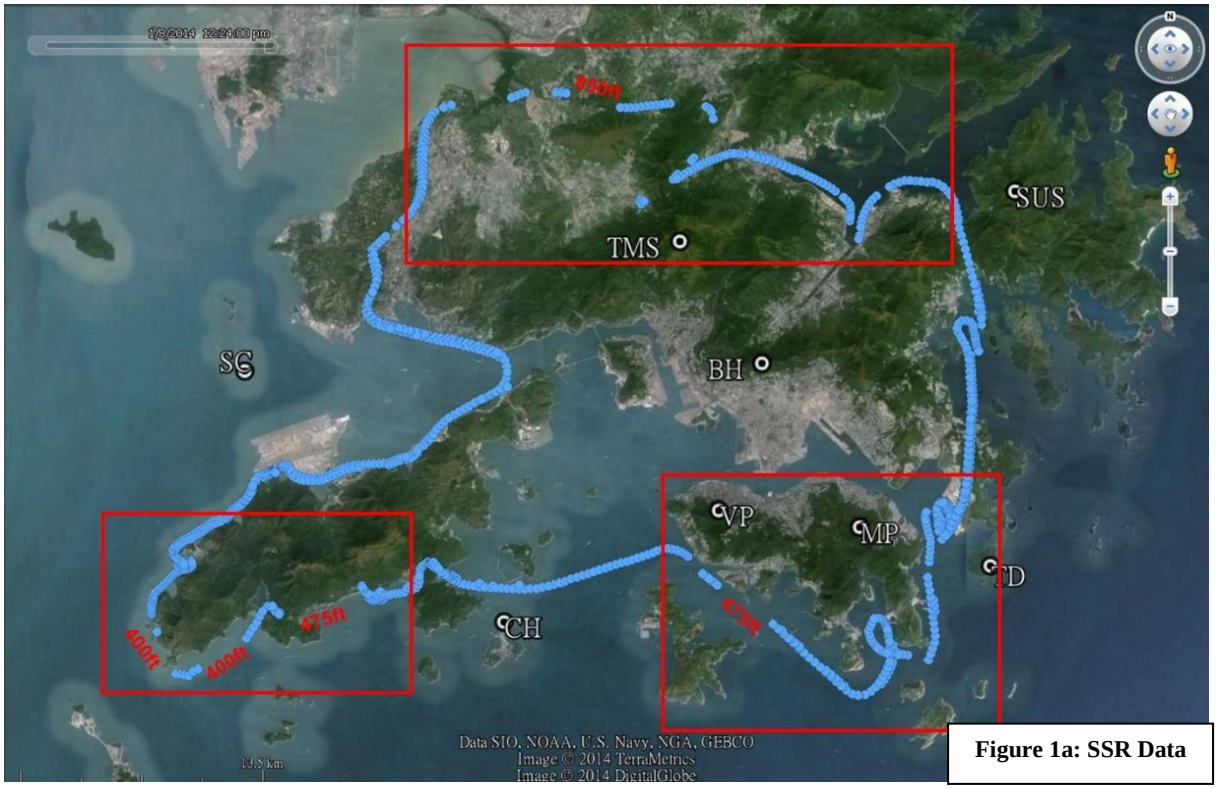

Figure 1a: SSR Data

Figure 1b : ADS-B Data

Helicopter Track

Area with target drops

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