International Civil Aviation Organization

Ninth Meeting of the Surveillance Implementation Coordination Group (SURICG/9)

Bangkok, Thailand, 07 - 10 May 2024

Agenda Item 7: Update on surveillance activities and explore potential cooperation opportunity

TRIAL OPERATION SPACE BASED ADS-B IN INDONESIA

(Presented by Indonesia)

SUMMARY

This paper provides information on trial operation Space Based ADS-B in Indonesia 2021 – 2022

1. INTRODUCTION

1.1. Indonesia has conducted trials of Space Based ADS-B to determine its capabilities in terrestrial airspace with many obstacles and oceanic areas.

1.2. Trial of Space Based ADS-B was carried out for one year, starting in early 2021 by Installing each Service Delivery Point (SDP) at Jakarta Air Traffic Center (JATSC) and Makassar Air Traffic Center (MATSC).

1.3. Currently, Indonesia is exploring the possibility of operational implementation.

2. DISCUSSION

2.1. ADS-B Ground Station

There are 49 operational ADS-B Ground Stations across Indonesia and have been integrated into 12 ATM Systems nationwide. From all the ADS-B Systems, 48 of them have the capability to receive and process up to DO-260B (ADS-B Version II) transponders.

The currently installed ADS-B Ground Station is not able to cover the whole airspace at all flight levels. Many mountains as obstacles and wide oceanic areas make it difficult for ADS-B Ground Station to reach all airspace areas.

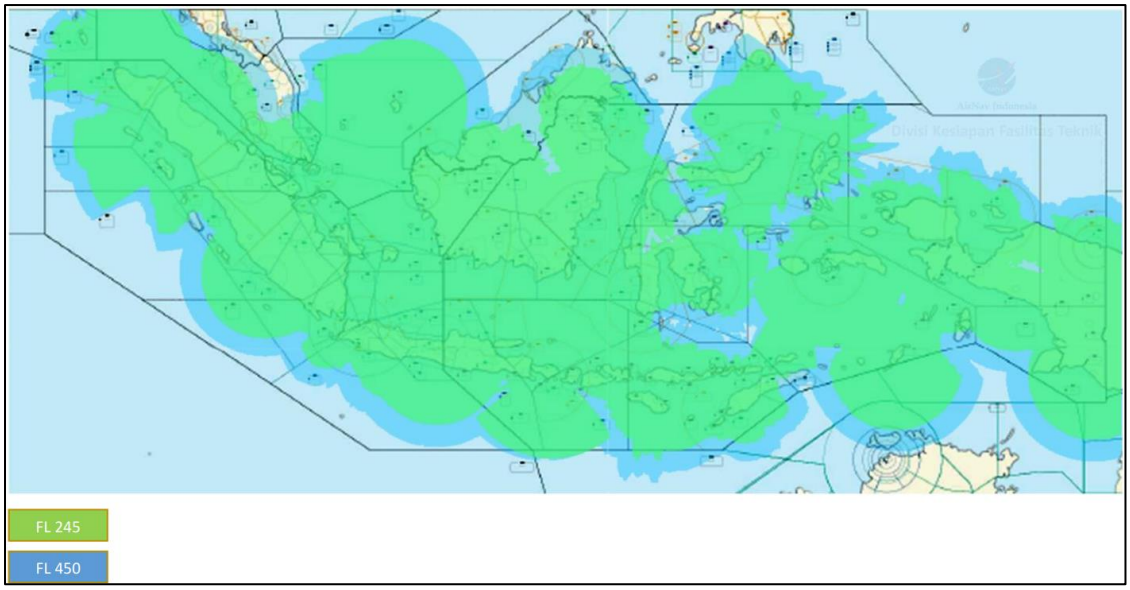

Figure 1 : ADS-B Coverage at FL245 and FL450

2.2. **Trial Space Based ADS-B**

In the Trial of Space Based ADS-B in 2021–2022, better coverage was obtained than ADS-B Ground Stations, especially in mountainous and oceanic areas.

Space based ADS-B uses the Iridium Satellite constellation at Low Earth Orbit (LEO) as the host. The latency of Space Based ADS-B data from the processing center in Virginia, USA, to Surveillance Data Processing (JATSC and MATSC) is less than or equal to 0.5 sec.

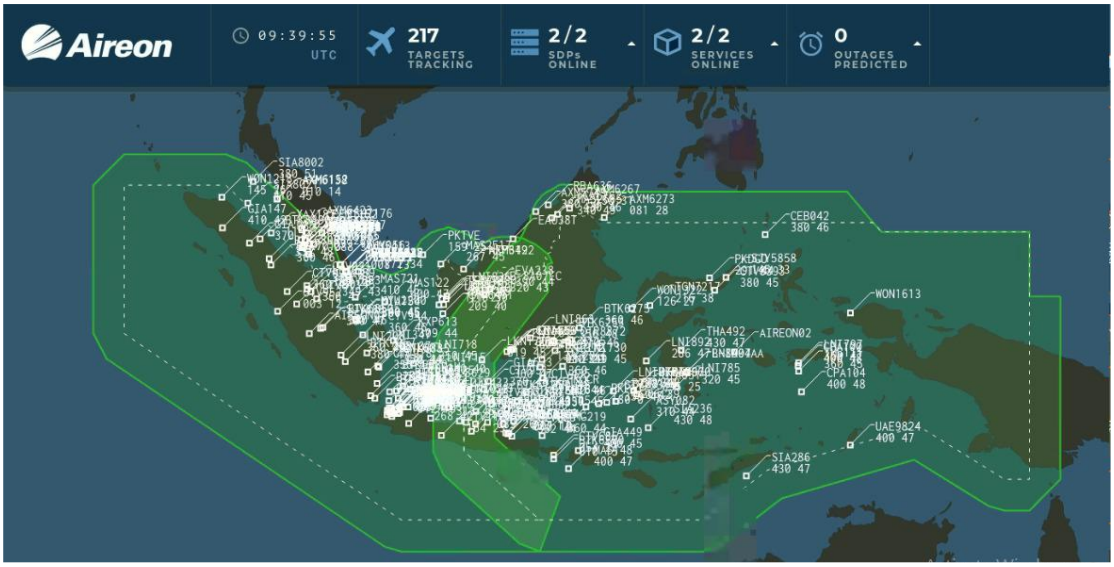

Figure 2 : Coverage of Trial Spaced Based ADS-B from Ground to FL660

2.3. **GNSS Based Surveillance**

The utilization of GNSS-based surveillance equipment like ADS-B is currently vulnerable due to the numerous disruptions in GNSS. Recent GPS/GNSS jamming and spoofing activities reported by civil air operators operating globally pose a potential safety of flight risk to civil aviation. GPS/GNSS disruptions often occur in and around conflict zones, military operations areas, and areas of counter unmanned aircraft systems (UAS) protection. The term GNSS includes satellite augmentation systems.

On January 25, 2024, FAA published a Safety Alert for Operators SAFO 24002 regarding Recognizing and Mitigating Global Positioning System (GPS) / Global Navigation Satellite System (GNSS) Disruptions.

Aircraft operators should be aware of impacts to their specific aircraft systems identified by Original Equipment Manufacturers (OEMs). Manufacturers, operators, and ATC should be aware of the general impacts of GPS/GNSS interference, jamming, and spoofing. Including strategies in the implementation of surveillance equipment that utilizes GNSS, so that in the event of disruptions to GNSS, the impact on operations can be minimized.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matter as appropriate

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