



International Civil Aviation Organization

MIDANPIRG/19 and RASG-MID/9 Meetings

(Riyadh, Saudi Arabia, 14 – 17 February 2022)

Agenda Item 5.8: CNS

ADS-B IMPLEMENTATION

(Presented by Secretariat)

SUMMARY

This paper aims to share the lessons learned from ADS-B implementation and highlights ADS-B implementation benefits and related services.

Action by the meeting is at paragraph 3.

REFERENCES

- ADS-B Webinar (16-17 November 2021)
- MID Region Surveillance Plan (ICAO MID DOC 013)
- Web-based MID Region AN Report 2021

1. INTRODUCTION

1.1 ICAO MID Office had planned to conduct a Symposium on Emerging Surveillance Technologies in 2020. The Symposium was postponed to 2022 due to COVID-19. The Symposium will be organized jointly with ICAO EUR/NAT and IFATSEA MENA in Tunis, 5-7 September 2022.

1.2 The meeting may wish to note that several MID States have implemented/ mandated ADS-B in recent years; therefore, and in order to raise States' awareness on ADS-B implementation requirements, concepts and benefits and to share lessons learned and best practices, ADS-B Webinar was successfully conducted (16-17 November 2021) jointly with ICAO EUR/NAT Office and with ICAO HQ support.

1.3 ADS-B has been identified as enabler for several ASBU Threads/ Elements.

2. DISCUSSION

ADS-B Implementation in the MID Region

2.1 ADS-B has been implemented at several MID States as backup and complementary means to the MSSR in Egypt, Iraq, Jordan, Kuwait, Sudan and UAE. Bahrain has implemented ADS-B for Vehicle Tracking purpose as well.

2.2 According to the MID Region Air Navigation Strategy (ICAO MID 002), the Alternative Surveillance Thread considered as priority one (1) for implementation in the MID Region, the overall ADS-B implementation level (B0/1) is 67% (8 States out of 11 implemented ADS-B out).

2.3 Saudi Arabia issued ADS-B/Out carriage Mandate as of 01 January 2023 for all airspace users flying in Class A, B, C, D and E. UAE issued ADS-B/Out carriage Mandate as of 01 January 2020. However, COVID restricted suppliers and manufacturer's ability to schedule upgrades to Airspace

users' fleet so some Operators were unable to meet deadline, therefore, UAE delayed the ADS-B mandate to 2 December 2021 (Ref. NOTAM A2567-20: Non ADS-B OUT aircraft temporarily allowed within EMIRATES FIR until 02 DEC 2021)

2.4 The ADS-B Webinar discussed lessons learned and best practices and agreed that States should:

- inform airspace users about ADS-B implementation plan and publish mandates early to give operators enough lead time;
- establish procedures for managing Waiver and Exemptions. Requests for temporary waivers and exemptions should be based on operational impact and hazard analyses. Waiver/ exemptions could be granted for limited time span;
- for planning purpose, find the ADS-B equipage rate based on Flight plan data collected and analyzed; MIDRMA would provide data regarding ADS-B equipage as well;
- continuously monitor operator compliance progress, conduct monthly statistics; and
- plan for non ADS-B OUT compliant operations (ex. State aircraft)

Spaced Based ADS-B to support Search and Rescue Service

2.5 The ADS-B Webinar was informed about Space based that ADS-B has been used for Search and Rescue service (Aireon Alert), due to the fast position update rate (every 8 seconds) compared to position update using voice position reporting (every 30 min) and ADS-C (every 15 min), the potential search area would be significantly decreased if the aircraft is equipped with ADS-B (reduced from about 590,000 Km² to 9.7 Km² for narrow body aircraft and for wide body aircraft reduced 607,000 Km² to 12 KM²).

2.6 The Registration for Aireon Alert Service is free for ANSP, Aircraft Operator/Airline, Regulator, SAR Organization. The registration leaflet is at **Appendix A**. In case of emergency, the Operator will verbally provide 4-D report that include (Latitude, Longitude, Altitude and Time).

ADS-B as indirect monitor to the GNSS RFI

2.7 The meeting may wish to note that ADS-B can be used to monitor the GNSS RFI; the Lack of ADS-B Position Reporting by multiple aircraft is a reliable indicator of GNSS RFI since GNSS is the primary source of position for ADS-B.

2.8 Positive confirmation of RFI and source origin location essential for radio regulatory resolution procedures, ADS-B enables a rough geolocation of the RFI source, however, limitations exist depending on available ADS-B track density and geometry, yet there is a need to frame CONOPS of RFI Detection and Downlink functions.

Near-Term ADS-B development

2.9 The meeting may wish to note that new capabilities are coming built on ADS-B technology

- ACAS X family of Collision Avoidance Systems (ACAS B2/1);
- ADS-B Out version 3 and associated Mode S transponder changes; to support ADS-B in Interval Management (CSEP B2/1) and RPAS operations; to fix known deficiencies or ambiguities in current standards and improve management of 1030/1090 MHz spectrum; and
- ADS-B In capabilities (Airborne Surveillance Applications) to support Interval Management.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Support the outcome of the ADS-B Webinar including the lessons learned/ best practices at para 2.4, when planning for ADS-B Mandate issuance;
- b) note the SAR service that can be provided based on SB ABS-B as appropriate;
- c) consider the benefits of using ADS-B as indirect GNSS RFI monitor; and
- d) participate actively in the Emerging Surveillance Technologies Symposium.

Aireon **ALERT** steps:

- 1.** Register for free at aireonalert.com. If you are an ANSP, Aircraft Operator/Airline, Regulator or Search and Rescue Organization, you will be granted access.
- 2.** If your aircraft, an aircraft in your airspace, or an aircraft you are tasked with locating is in an emergency situation, **log in to your Aireon ALERT account**.
- 3.** Call Aireon ALERT 24/7/365 operator with the number found on your Aireon ALERT Dashboard.
- 4.** When prompted, enter your **8-digit user number followed by #** (this is located on the Aireon ALERT Dashboard).
- 5.** When prompted, enter your **current 8-digit pin followed by #** (this is located on the Aireon ALERT Dashboard).
- 6.** You will then be connected to the Aireon ALERT operator.
- 7.** The Aireon ALERT operator will then request the **ICAO 24-bit identifier** or the **Flight ID** of the aircraft having the emergency.
- 8.** The Aireon ALERT operator will then locate the last known position of the aircraft and, if found, **will verbally provide a 4-dimensional report that includes latitude, longitude, altitude and time**.
- 9.** The Aireon ALERT operator will also email a package to the requester's email address. **It will include a map of the last 15 minutes of flight with one plot per minute and the 4-dimensional report information.**



LOGIN



User No: XXXXXXXX

Current Pin: XXXXXXXX

