



International Civil Aviation Organization

MIDANPIRG Air Traffic Management Sub-Group

Tenth Meeting (ATM SG/10)

(Jeddah, Saudi Arabia, 20 – 23 October 2024)

Agenda Item 3: Planning and Implementation issues related to ATM/SAR

ADS-B INTEGRATION AND IMPLEMENTATION INITIATIVES OF OMAN

(Presented by Sultanate of Oman)

SUMMARY

This working paper provides an overview of Oman's initiatives to integrate ADS-B into the ATM system, with a focus on improving airspace safety within the Muscat FIR through its effective implementation.

Action by the meeting is at paragraph 3.

REFERENCES

- WP/65.Enhancing Airspace Safety: Oman's Strategy Of ADS-B Implementation, MIDANPIRG/21
- The Aviation System Block Upgrades: The framework for global harmonization, July 2016
- Global Air Navigation Plan, 6th Edition, 2020

1. INTRODUCTION

1.1 Modern ATC operations rely on advanced technologies for global aviation safety and efficiency, with ADS-B emerging as a key surveillance system that provides real-time aircraft data, enhanced flexibility, improved accuracy, and faster updates.

1.2 ICAO's ASBU module- ASUR promotes ADS-B as a cost-effective alternative to traditional radar, especially in areas with limited radar coverage, and as a vital component of future ATM systems, either enhancing radar surveillance or serving as a primary means of surveillance.

1.3 Oman has made significant progresses in enhancing the reliability of its surveillance services, with a focus on implementing redundant systems and adopting advanced ADS-B technologies in recent years.

1.4 By integrating ADS-B technology into ATM system, Oman wishes to successfully consolidate surveillance data from various sources, enhancing situational awareness, optimizing airspace utilization, and improving the safety and efficiency of ATC operations.

2. DISCUSSION

2.1 In 2022-2023, Oman deployed 8 ADS-B ground stations, supported by Data Processing Systems, to enhance surveillance coverage, optimize data analysis, and improve ATCO decision-making for greater safety and situational awareness.

2.2 The integration of ADS-B data into the existing ATM system was tested at the Contingency Centre on various dates between February and April 2024, from 10:00 to 12:00 local time. The tests demonstrated feasibility, showing a high level of accuracy, integrity, and reliability, as well as enhanced surveillance coverage, with minimal operational limitations.

2.3 Motivated by the successful initial testing, the ADS-B Integration Plan for ATC has been devised with the objectives of achieving:

- Enhanced ATC performance,
- Improved Safety,
- Advanced surveillance capabilities,
- Reduced ATC workload, and
- Future-proofing.

2.4 ADS-B Integration Plan includes following major activities:

a) Safety Risk Analysis and Management:

- Different scenarios for successful and unsuccessful integration were considered and analysed during the safety activities.
- Appropriate mitigation actions were proposed for the identified risks.
- Stakeholder engagement was ensured throughout the safety activities.

b) Rigorous testing and validation:

- Initial testing has been successfully performed in the Muscat Contingency Centre (MCC).
- The same testing will also be conducted in the Muscat ACC.

c) ATC Actions for Integration:

A plan of action has been devised for ACC and MCC with series of activities to be performed by ACC and MCC ATCOs and WSOs.

- Pre-integration Plan of Actions
- Plan of Actions during Integration
- Post-integration Plan of Actions

d) Post Implementing Monitoring:

A mechanism will be developed to carry out the following actions for the enhancing ADS-B implementation:

- Vigilant monitoring and observation
- Collection of ATCO feedback
- Evaluation and improvement

2.5 Once the integration plan becomes successfully completed, the system will be brought into ATC operation in a planned way and in a phased manner to have a better understanding of and confidence in the system.

- Phase 1. Use of ADS-B data for situational awareness
- Phase 2. Use of ADS-B data for Surveillance Monitoring Service only

- Phase 3. Use of ADS-B data for full-fledged Surveillance Service together with current Radar System

2.6 An AIP SUP or AIC will be issued well in advance to inform airline operators and airspace users of the equipage requirements and procedures to be complied with within the designated airspace of the Muscat FIR.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note of the information contained in this paper;
- b) endorse Oman's ongoing ADS-B integration and implementation initiatives, which are aimed at enhancing airspace safety and operational efficiency;
- c) encourage member states to collaborate in sharing best practices, addressing challenges, and fostering a harmonized approach to ADS-B implementation; and
- d) discuss any relevant matters as appropriate.

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