



International Civil Aviation Organization

MIDANPIRG Communication, Navigation and Surveillance Sub-Group

Eleventh Meeting (CNS SG/11)
(Muscat, Oman, 16-19 May 2022)

Agenda Item 4: CNS Planning and Implementation in the MID Region

**IMPLEMENTATION OF AUTOMATIC DEPENDENT SURVEILLANCE
BROADCAST (ADS-B)**

(Presented by Sultanate of Oman.)

SUMMARY

This paper presents the information on Automatic Dependent Surveillance-Broadcast (ADS-B) Out equipage mandate in the Sultanate of Oman with an overview on the planning for the implementation of ADS-B ground surveillance system that will be used to enhance and expand Air Traffic services surveillance within Muscat FIR. The paper proposes also to collect and share information on the level of ADS-B equipage through MID Region.

Action by the meeting is at paragraph 3.

REFERENCES

- ICAO Annexes 10, Vol. IV and 11.
- Doc 4444, PANS-ATM
- Doc 9854, Global Air Traffic Management Operational Concept
- Doc 9750, Global Air Navigation Plan
- ICAO MID eANP Vol III, Part II, Table ASUR 3-1
- MID SUR Plan Doc 013.

1. INTRODUCTION

1.1 The meeting may wish to recall a Conclusion in MIDANPIRG/19 held in Riyadh, Saudi Arabia from 14-17 February 2022 on ADS-B:

MIDANPIRG CONCLUSION 19/25: STATISTICS ON ADS-B EQUIPAGE LEVEL

That the MIDRMA Board explore the possibility to extend the functions and responsibilities of the MIDRMA to include the collection and sharing of information on the level of ADS-B equipage of the registered fleet and all flights operating from/to or through the MID RVSM airspace.

1.2 The meeting may wish to also recall the following MIDANPIRG/19 Decision:

MIDANPIRG DECISION 19/26: MID REGION SURVEILLANCE PLAN

That, the CNS SG, in coordination with the ATM SG update the MID Region Surveillance Plan (MID Doc 013) considering the outcome of the ADS-B Webinar and MID States' experience in ADS-B implementation.

2. DISCUSSION

2.1 The Automatic Dependent Surveillance-Broadcast (ADS-B) is an advanced surveillance technology that combines an aircraft's positioning source, aircraft avionics, and a ground infrastructure to create an accurate surveillance interface between aircraft and air traffic control (ATC). Use of ADS-B Out will gradually move ATC from a conventional radar-based system to an aircraft location system based on satellite-derived position and speed. Aircraft with ADS-B Out broadcast information, such as identification, current position, altitude, and speed, through an onboard transmitter, which can be received by ADS-B ground stations and by other equipped aircrafts.

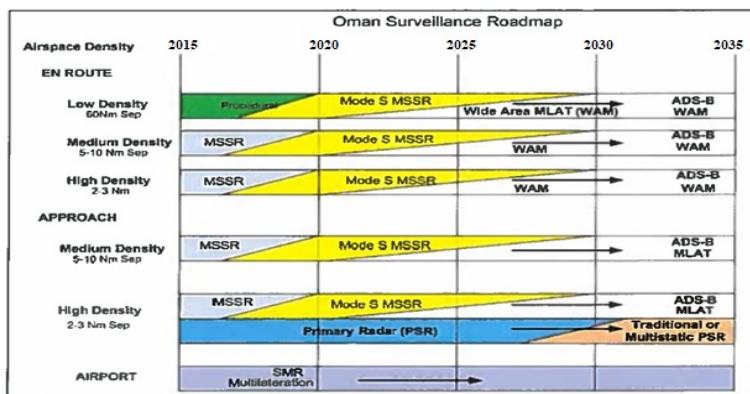
2.2 ADS-B has been identified as an essential Radar-like component in enhancing global safety in ATS and achieving efficiency objectives that bring tangible operational benefits to aviation stakeholders. The ADS-B avionics are recognized as an enabler of the global ATM concept bringing cost-effective substantial safety & capacity benefits.

2.3 As ADS-B Out can provide air traffic controllers with real-time position/velocity information in all airspace that is more accurate than the information provided by radar systems (range dependent). With more accurate information, ATC will be able to separate safely aircraft with improved accuracy and timing leading to an increase of efficiency, and capacity that allows accommodation of traffic growth. Hence, ADS-B Out equipage requirements and performance standards for fleet operating in the MID Region will support the improvements in air traffic management.

2.4 At Regional level, the MID Region Surveillance Plan (MID Doc 013) encourages MID States to consider emerging dependent Surveillance technologies (ADS-B and MLAT) in their National Surveillance Plans and to use incentive strategy with aircraft operators and airspace users to accelerate ADS-B equipage.

2.5 ADS-B technology is integrated with many new MLAT systems and this technology supplements Regional airport TMA and en-route airspace, supplementing the MSSR technology and Enable a seamless transition at end of life for MSSR systems. The ADS-B should become the *principle surveillance technologies from 2027*, subject to the fulfillment of all regulatory mandate requirements.

2.6 In accordance to the above Oman has developed a roadmap plan for the surveillance systems during the period 2015-2035 as illustrated in the Appendix. The implementation of the plan delayed due to the global economic constrains. However, the project resumed last year and phase one is in progress where an MSSR Mode S radar along with Seven ADS-B stations are expected to be in operation by Q4 2022.



2.7 The ADS-B Ground surveillance system will consist initially of seven ADS-B Ground stations distributed to provide En-route redundancy by introducing an overlapping coverage in Muscat FIR where Radar surveillance is already available and as a gap filler on areas with no MSSR surveillance coverage. In addition to the MCT and SLL TMAs’ improvements with more than one surveillance sensors.

