



*International Civil Aviation Organization*

**MIDANPIRG/17 and RASG-MID/7 Meeting**

*(Cairo, Egypt, 15 – 18 April 2019)*

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**Agenda Item 6.2: Air Navigation Planning and Implementation**

**SURVEILLANCE ENHANCEMENTS AND DATA SHARING**

*(Presented by UAE)*

**SUMMARY**

This paper discusses the enhancements to surveillance systems and proposes a collaborative approach to the sharing of surveillance data between states.

Action by the meeting is at paragraph 3.

**REFERENCES**

- MID Region Surveillance Plan
- Global Air Navigation Plan

**1. INTRODUCTION**

1.1 The meeting may recall the MIDANPIRG 16/23 decision to develop a comprehensive MID Region surveillance plan by the CNS SG in coordination with the ATM SG. This plan was to take into consideration the users and States operational requirements and aimed at enhancing surveillance throughout the Region.

1.2 At both the CNS SG/8 and SG/9 meetings the surveillance enhancements have been discussed and this WP provides a brief of the improvements in surveillance over the last few years and the benefits associated with implementing the newer surveillance technologies as well as the benefits of sharing surveillance data between States.

**2. DISCUSSION**

2.1 Surveillance enhancements are an essential part of the ICAO ASBU's and a move towards Mode S/ADS-B technologies will form the backbone of the surveillance block upgrades.

2.2 Over the last few years there have been significant improvements in Mode-S aircraft equipage as well as the performance of the ground based architecture and this has allowed States to include Mode S/ADS-B/MLAT data into their ATM systems.

2.3 The benefits Mode S has over SSR is follows:

- Selective interrogation
- 25ft altitude reporting vs 100ft with SSR
- Increased information for ATC(i.e. short term intent)
- Prevents garbling

- High update rate when using ADS-B.

2.4 Small features offered by Mode S can provide massive benefits to Air Traffic Control. By simply adding the enhanced Mode S Downlink Aircraft Parameters (DAP's) data into our system, in 2015, we have reduced our level busts by approximately 60% - 65%.

2.5 Along with this, the combination of several Mode S radar sources and multiple ADS-B sources has improved the tracking and performance of our tracker significantly despite ADS-B out not yet being mandated for our airspace.

2.6 As of 1 January 2020 though, ADS-B out is mandatory for all commercial operators operating under IFR in the UAE FIR. This will ensure that our operations could provide separation on ADS-B acquired targets without the need for legacy radar reports.

2.7 ADS-B sensors are relatively cheap, provide similar coverage to traditional SSR's (terrain dependent) and can be used to complement traditional radar coverage or used to fill gaps in the surveillance coverage.

2.8 Most ADS-B sensors provide filtering as part of their features and this can be used to filter out any unwanted data to the ATM system while at the same time providing a high update rate.

2.9 While all States generally have sufficient surveillance coverage, due to geographical factors, there are still area's that require procedural separation due to the unavailability of surveillance.

2.10 Taking this into consideration one of the ways of covering the gaps is the sharing of surveillance data between States.

2.11 Neighbouring States should work together in a collaborative manner in assessing their surveillance coverage and requirements and where possible assist each other with surveillance data.

2.12 That being said there are still areas that cannot be covered by traditional ground based surveillance and for this we should look at the feasibility of the space based ADS-B solution offered by Aireon.

2.13 This system provides 100% global coverage for ADS-B equipped aircraft and on 2 April 2019 Aireon officially launched their satellite based ADS-B service with Nav Canada being the first ANSP to use it operationally over in the Gander Oceanic airspace (North Atlantic).

2.14 The above mentioned advances in surveillance technology need to be assessed by each ANSP and where possible implemented to avail the benefits offered by these technologies.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) urge States to work together in sharing of surveillance data to assist in filling surveillance gaps;
- b) urge States to mandate Mode S/ADS-B equipage to avail the benefits associated with these technologies; and

urge States to look at the feasibility of implementing space based ADS-B services where ground based coverage is not available or possible.