



Agenda Item 3: Report of activities and deliverables of the INTEROP TF and Subgroups

ADS-IMPLEMENTATION

(Prepared by Uruguay)

SUMMARY

This working paper presents the status of the implementation of the Automatic Dependent Surveillance System - Broadcasting (ADS-B) in Uruguay.

References:

- Global Air Navigation Plan (GANP), ICAO Doc. 9750, Sixth Edition (online format).
- Cir. 326 AN/188 Evaluation of ADS-B surveillance and multilateration surveillance in support of air traffic services and implementation guidelines.

1. Background

1.1 Automatic Dependent Surveillance - Broadcast (ADS-B) and multilateration (MLAT) are additional forms of electronic surveillance that can be used to support air traffic services (ATS) in en-route and in terminal area operations. Although radar was previously the only form of electronic surveillance used for such operations, ADS-B and MLAT could be introduced in areas that are wholly or partially without radar service.¹

1.2 In order to support the provision of air traffic services and operational applications at reduced cost and increased surveillance coverage, Uruguay developed a ROUTE SHEET to continue the ADS-B implementation process in the Montevideo FIR, in accordance with ASBU ASUR-B0/1 Automatic Dependent Surveillance - Broadcast (ADS-B) in its airspace.

1.3 Since AN Conf/11 (2003), the ICAO Council supported the use of the ADS-B concept, expressed in ICAO Circular 326-AN/188, which cites several improvements and benefits for ATM. In the context of the evaluation² taken into account by the Uruguayan State, the two benefits highlighted were taken into account:

- Expansion of surveillance coverage for low altitudes (below the current radar coverage in areas where there is currently no radar coverage), resulting in a more efficient use of airspace;
- Expansion of coverage in the Montevideo Oriental oceanic sector.
- Cost savings through the implementation of an ADS-B surveillance system instead of the life-cycle costs associated with the installation, maintenance and expansion of existing radar-based surveillance systems.
- Strengthen operational safety with alternative surveillance systems.

¹ Cir 326 AN/188 Assessment of ADS-B surveillance and multilateration surveillance in support of air traffic services and implementation guidelines

² Assessment by the *Safety and Separation of Airspace (SASP) expert group.*

1.4 The implementation of the ADS-B is a process that integrates many areas and will have to work together as a team to achieve its implementation.

1.5 ADS-B is a project, as such it must have specific development objectives and goals to meet the four enablers of the GANP, Ground System Infrastructure, Aircraft On-Board System Capability (avionics), ATC personnel training and legislation/regulation.

2. Analysis

2.1 In order to have the planned surveillance capacity, in 2011 was initiated the purchase of the update of the AIRCON 2100 radar data automation and presentation system of INDRA to include the ... "suitable and enabled interfaces to incorporate: *AIDC, S-mode radar processing, OLDI, CPDLC, ADS-B, ADS-C and MLAT*", which was definitely installed in 2011.

2.2 In support of this solution, Advisory Circulars CA/UY/70/01A "Implementation of automatic dependent surveillance - broadcasting (ADS-B) systems" from the CNS point of view and CA/UY/ANS/ATM/013 "Automatic dependent surveillance - broadcasting (ADS-B)" with an ATM operational approach were issued.

2.3 The current deployment of ADS-B facilities in Uruguay is as follows:

LOCATION	SIC	SAC	RANGE	LATITUDE	LONGITUDE
Carrasco	10	220	200 NM	34° 49' 54.80" S	056° 00' 42.70" W
Durazno	11	220	200 NM	33° 21' 05.00" S	056° 30' 10.00" W
Tacuarembó	13	220	200 NM	31° 45' 04.08" S	055° 55' 44.32" W
Salto	14	220	200 NM	31° 26' 16.90" S	057° 58' 51.60" W

2.4 Although the equipment is already installed, the ADS-B / MLAT system at Laguna del Sauce International Airport (SULS) has yet to be put into operation. Once operational, it will be possible to evaluate the system's capacity to operate with an operability similar to radar, since MLAT can receive and triangulate Mode A/C responses from aircraft as well as Mode S, in order to establish the operational service as set up in the Guide of Operational Technical Considerations for the implementation of ADS-B in the SAM region.

