



Agenda item 5: Operational implementation of new ATM automated systems and integration of the existing systems

STATUS OF ADS-B IMPLEMENTATION IN THE SAM REGION

(Presented by the Secretariat)

SUMMARY	
This Working Paper presents the current state of ADS-B implementation in the SAM Region.	
References	
<ul style="list-style-type: none">• Workshop/Seminar for the ADS-B implementation ADS-B, Lima-Peru, 13 to 16 November, 2017;• Twenty Second Workshop/Meeting of the SAM Implementation Group (SAM/IG/22), Lima-Peru, 19 to 23 November, 2018; y• Automatic Dependent Surveillance – Broadcast (ADS-B) Implementation and Regulation Meeting for NAM/CAR/SAM Regions (ADS-B/LEG), Mexico City-Mexico, 26 to 30 November 2018.	
ICAO strategic objectives:	<i>A – Safety; and B – Air navigation capacity and efficiency</i>

1 Introduction

1.1 As a basis for the implementation of the ADS-B in the SAM Region, a CAR/SAM Unified Regional Surveillance Strategy, and a Technical and Operational Considerations Guide for the Implementation of the ADS-B in the SAM Region, have been prepared.

1.2 Additionally, a study on the Convenience and Feasibility of the Satellite ADS-B in a Regional Implementation has been presented during the Twenty Second Workshop/Meeting of the SAM Region Implementation Group (SAM/IG/ 22) of the SAM Region for the consideration of the States. In the links below, it is possible to access the study:

1) Spanish Version:

https://www.dropbox.com/s/bz0aqwp5b1xw4rw/SAM%20Estudio%20sobre%20ADS_B%20Sat%2010%20Enero%202019.pdf?dl=0

2) English Version:

https://www.dropbox.com/s/3g9smip32z0avnu/SAM%20ADS_B%20Sat%20Study%2010%20Jan%202019%20.pdf?dl=0

2 Analysis

IMPLEMENTATION INITIATIVES FOR TERRESTRIAL ADS-B

Argentina

2.1 Argentina has implemented ADS-B information exchange tests, using the REDDIG to receive information from ADS-B stations in Paraguay.

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Brazil

2.3 Brazil has developed an implementation of the ADS-B to support, mainly, the air operations in the TMA-Macaé, place of interest of the oil industry that is characterized by the movement of helicopters between the continent and the platforms or vessels anchored in that basin in the oceanic zone, for the transport of people and cargo.

2.4 To serve the Campos basin in the airspace corresponding to the Macaé-TMA, 6 ADS-B stations were installed: four stations on maritime platforms and two on the continent. This infrastructure, integrated with the current radar network that supports air traffic control in that region, allows surveillance throughout the TMA airspace at 500 feet and more. Figure 1 presents coverage in the TMA-Macaé area.

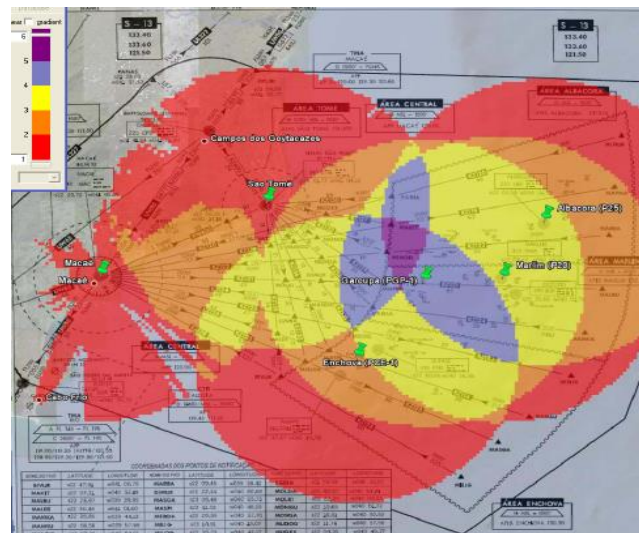


Figure 1 – Macaé TMA in Brasil

2.5 Brazil is finalizing the procedures to sign a Memorandum of Understanding with the provider of the Satellite ADS-B, in order to carry out tests with the information that the company will provide in the first quarter of 2019.

Colombia

2.6 Colombia has developed an extensive project for ADS-B implementation, with the objective of providing service from January 2020 on. Figure 2 depicts the location of the 26 ADS-B stations deployed.



Figure 2 – ADS-B stations of Colombia

French Guiana

2.7 French Guiana has plans to implement in 2019, 5 ADS-B stations in the following locations: Rochambeau (airport), Mont-Matoury, Maripasoula, Mana and Saint Georges.

Guyana

2.8 Guyana has implemented a project to implement 5 ADS-B Skysurv stations. They were initially implanted 4 in the following locations: Port Kaituma (SYPK), Kamarang (SYKM), Kaieteur (SYKA) and Annai (SYAN). Figure 3 presents the ADS-B coverage planned for Guyana.

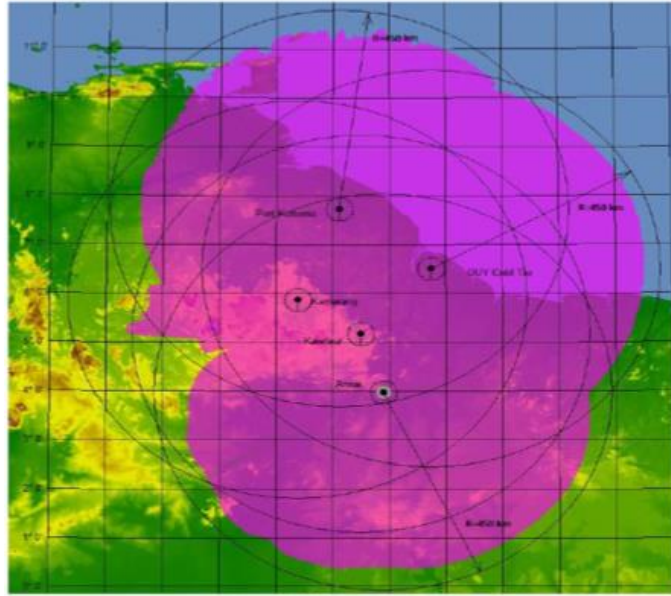


Figure 3 – ADS-B Coverage in Guyana for FL 300

Panama

2.9 Panama has deployed ADS-B stations in Cerro Jefe, Volcano Baru, Cerro Cana Agua and El Porvenir.

Paraguay

2.10 Paraguay has implemented 6 ADS-B stations at the M. R. Alonso Unified Control Center, Guarani Airport, Concepción Airport, San Juan Baptista, Mariscal Estigarribia Airport and Bahia Negra Airport.

Peru

2.11 Peru has installed two stations ADS-B (INDRA model GSS-20) for testing purpose in Lima and Pisco.

Venezuela

2.12 Venezuela was in process to acquire ADS-B systems for Lagunazo, Santa Elena de Uairen, Station Cerro Los Colorados, Station Cerro Catire, Puerto Ordaz Airport, Margarita Airport and La Chinita Airport.

SATELLITE ADS-B IMPLEMENTATION INITIATIVE

Study on the convenience and feasibility of the Satellite ADS-B in a regional implementation

2.13 Pursuant to *Project RLA/06/901 - Assistance for the implementation of a regional ATM system considering the operational concept of ATM and the support of corresponding technology in communications, navigation and surveillance (CNS)*, and within the framework of its activities approved during the Eleventh Meeting of the Coordination Committee (RCC/11) held in Lima, Peru on October 5, 2017, it was considered necessary to prepare a study to analyze the convenience and feasibility of adopting the satellite ADS-B service at a regional level within the framework of the action plan for the implementation of surveillance, multilateration and ADS systems in the Region.

2.14 In this regard, the General Directorate of Civil Aviation of Ecuador was asked for the support of Mr. Ivan Salas Garzón, CNS Specialist, for the preparation of this study in a mission held in Lima, Peru from 23 to 27 April, 2018, where a preliminary study was prepared and presented at the SAM/IG/21 Meeting, carried out in Lima, from 21 to 25 May, 2018.

2.15 The Implementation Group approved the preliminary study and requested that the States provide more information for the conclusion of the study. In this regard, the CNS Specialist was assigned to conclude the study in the week of September 24 to 28, 2018, which was effectively fulfilled and the final product was presented at the SAM/IG 22 Meeting, held in Lima, from 19 to 23 November 23, 2018.

2.16 The SAM/IG/22 Meeting approved the study and requested the Secretariat to circulate the document for the knowledge of all the States of the Region, for the evaluation of those responsible for the planning of each country, with a view to supporting the discussions as to participate in a regional implementation at the present Meeting.

2.17 The operational benefits and advantages that could be derived from the satellite-based ADS-B service, are:

- ✓ Coverage of existing gaps in the surveillance systems of the States in the Region;
- ✓ Coverage in boundary areas as an alternative to the exchange of surveillance data between adjacent States;
- ✓ Coverage in oceanic areas out of reach of ground surveillance systems;
- ✓ Surveillance solution for non-FIR airspace;
- ✓ Constant update of target positions, unlike periodic update provided by ADS-C.

2.18 The following benefits of a regional implementation are identified in the study:

2.19 **Safety** – Effective surveillance in areas that currently lack coverage, definitely contributing to increased safety.

2.20 **Flight efficiency** – Effective surveillance of ADS-B information, providing the means to optimize flights and increase airspace utilization capacity.

2.21 **Flexibility** – The service provided allows the ANSP to hire specific areas or volumes at the flight levels of operational interest, as the only means of surveillance or as augmentation of the existing surveillance infrastructure, and as redundancy in areas of critical operational interest.

2.22 **Homogeneity** – With States obtaining information from a single source, with the same parameter levels, it is possible to standardize air navigation services throughout the region.

2.23 **Environment** – Improved flight management, increasing capacity, more direct flights and reduced waiting times contribute to reduce adverse impact of aviation on the environment.

2.24 **Profitability** – With more efficient and economic flights, the profitability for aircraft operators becomes sustainable, with positive impact for the final user. From the point of view of the ANSPs, the reduction in implemented infrastructure and the required maintenance have a significant impact on this aspect.

FOCAL POINTS ADS-B

2.25 The Meeting is asked to update the information presented in the **Appendix A** to this working paper.

3 Suggested actions

3.1 The Meeting is invited to:

- a) Take note of the information presented in this Working Paper;
- b) Discuss the feasibility and procedures for a potential implementation of the space-based ADS-B service;
- c) Update the information of Appendix A; and
- d) Agree on other actions deemed necessary.

APPENDIX A / APENDICE A

ADS-B
NATIONAL FOCAL POINTS / PUNTOS FOCALES NACIONALES

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
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GUYANA FR./ FRENCH GUIANA					
PANAMA					
PARAGUAY					
PERÚ					
SURINAM/ SURINAME					

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
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