



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

WORKING PAPER

ADS-B/OUT/M — WP/05  
29/07/19

**Automatic Dependent Surveillance – Broadcast OUT Implementation Meeting for the  
NAM/CAR Regions (ADS-B/OUT/M)  
Ottawa, Canada, 21-23 August 2019**

- Agenda Item 2: Update Status ADS-B Implementation for States**  
**2.2 Update ADS-B Status implementation and regulation development by States**

**STATUS OF ADS-B IMPLEMENTATION IN CUBA**

(Presented by Cuba)

<b>EXECUTIVE SUMMARY</b>	
This document presents the status of ADS-B implementation in Cuba and the operational actions derived from the ADS-B operational implementation in January 2020.	
<b>Action:</b>	Suggested actions are presented in Section 4.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• Automatic Dependent Surveillance – Broadcast (ADS-B) Implementation and Regulation Meeting for the NAM/CAR/SAM Regions (ADS-B/LEG)</li><li>• Fifth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/5)</li><li>• Fifth Meeting of the Programmes and Projects Review Committee (PPRC/5)</li></ul>

**1. Introduction**

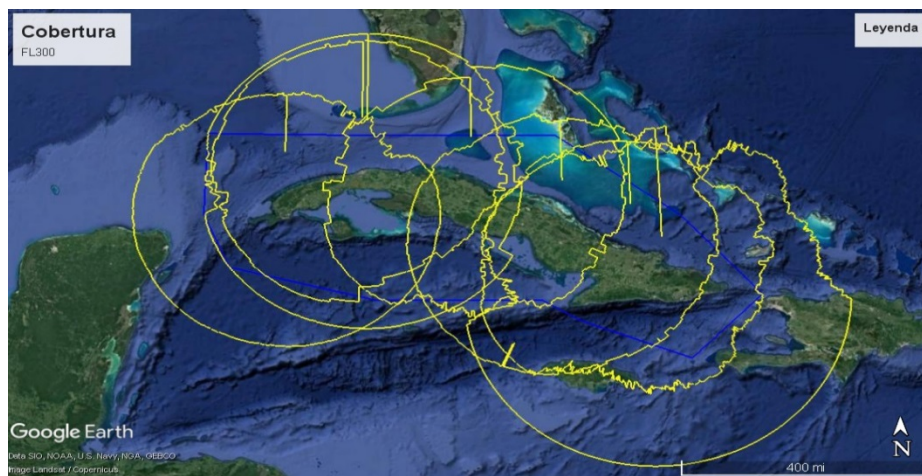
1.1 Our region agreed to begin with the operational launch of the ADS-B as a new surveillance system which, together with the existing ones, will substantially support the actions outlined within the Automation and Situational Awareness programmes and projects, and will guarantee the operations' safety in our area.

1.2 The States of the region should plan their own ADS-B implementations, as well as analyse their impact on neighbouring States; In this sense, we will present the actions of Cuba for its operational implementation of the ADS-B, as well as the immediate impact of the operational entry of the ADS-B in the neighbouring FIRs of the United States.

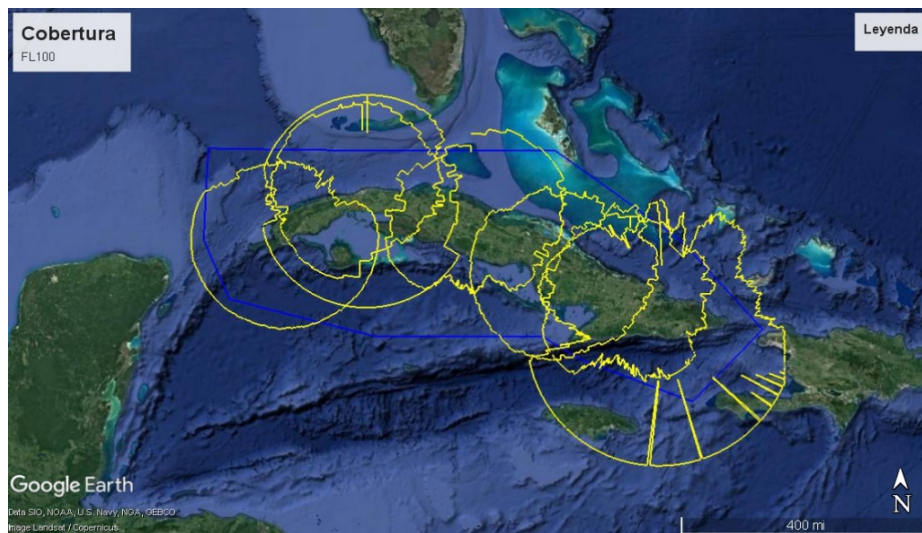
**2. Discussion**

2.1 Since 2010, Cuba have six ADS-B Version 1 facilities that allows a 100% coverage in Havana FIR in route with ADS-B and the installation of more facilities is foreseen for 2013 for the enhancement of low attitude coverage and wider redundancy, using Version DO260B.

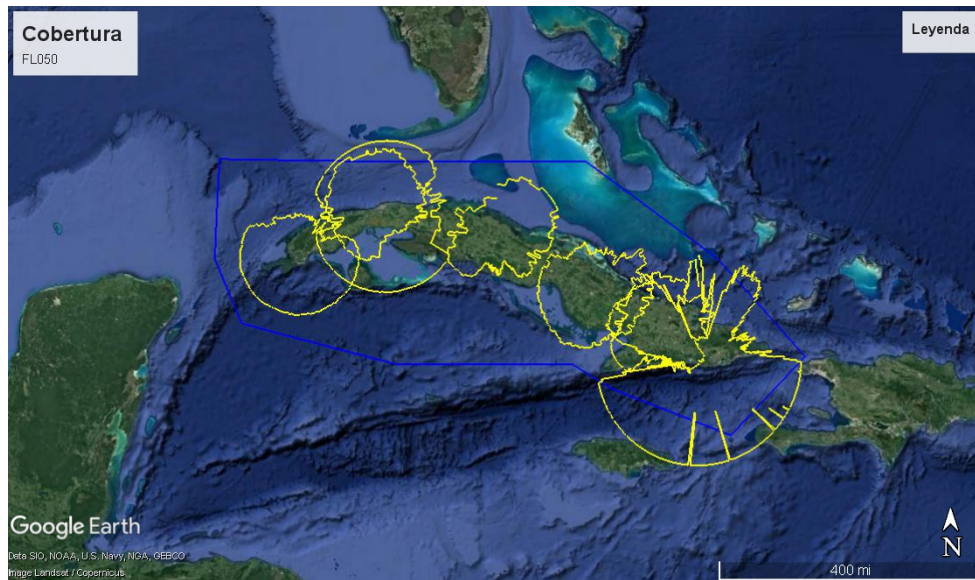
Coverage at 30000 feet:



Coverage at 10000 feet



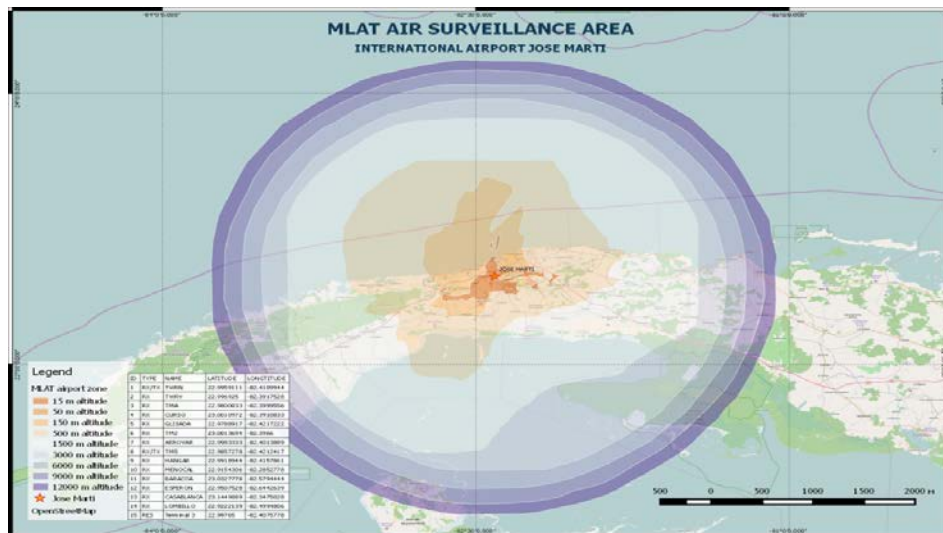
Coverage at 5000 feet



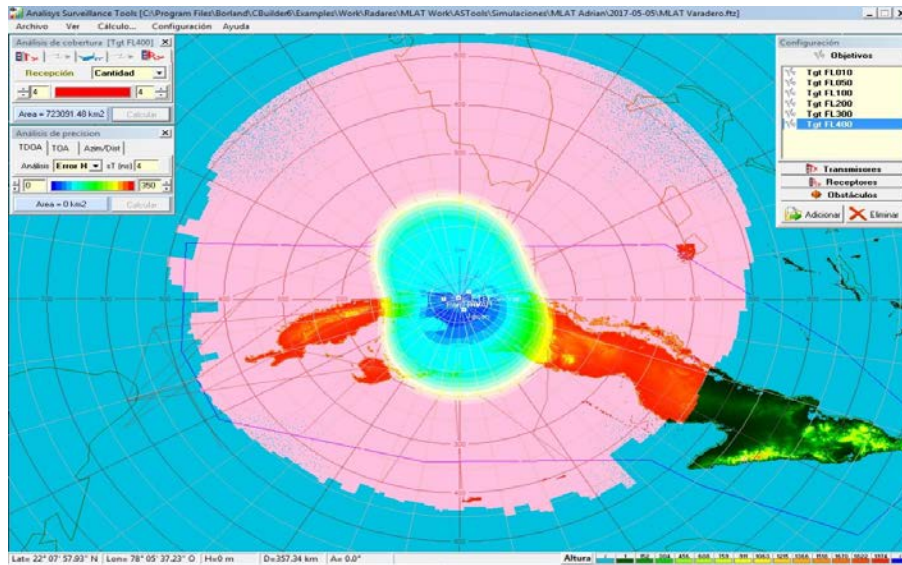
2.2 Up to date, the information of these sensors has not been used in our Air Traffic Control Centre (CCTA) because of technical limitations of the automatized system, so, in parallel, for the assimilation of the information generated in all the installed surveillance sensors, the modernization and broadening of all the capacities of our automatized system in the CCTA has been started, what would be finished in 2020.

2.3 Additionally, multilateration systems have been installed in Varadero international airport in Havana, for its incorporation in the surveillance information mosaic that will have the CCTA.

2.4 MLAT Havana coverage for different FPL:



## 2.5 MLAT Varadero coverage for 4000 feet:



2.6 We have sharing data with Jamaica and COCESNA, respectively, from San Julián and Camagüey monopulse radars; the received signals from this sharing are used only as backup for the CCTA, due to its capacity limitations.

2.7 From the operational point of view, and as provided in our national regulations, the air transport service provider, based on a quality procedure implemented in its security management system, carry out a security evaluation using changes in the ATM systems and, subsequently a follow-up further to the implementation.

2.8 In the case of the ADS-B implementation in the United States, the implementation philosophy of ICAO Doc 4444 remains the same as provided in the Agreement letters in force between both States, due that the separations remain with the currently agreed distances.

2.9 The next step will be to publish the AIC of the ADS-B implementation in the Havana FIR by 2020.

2.10 Additionally, a follow-up will be carried out for aircrafts that can be equipped with the system, starting when the modernization of our CCTA automatized system is finished, using the generated statistics for future decision-making.

### 3. Conclusions

3.1 Currently, our State counts with ADS-B receptors to receive the signals of aircrafts equipped with ADS-B Version DO-260B in the TMA Havana and Varadero, and Version 1 for the rest of the country.

3.2 We estimate having the automatized system operational by 2020, receiving, processing and representing the signals of all the installed surveillance systems, as well as the signals from the data-sharing with the neighbour States in the surveillance mosaic of the CCTA services.

3.3 We have planned having 100% coverage in the FIR, with ADS-B Version DO-260B, before 2023.

3.4 Since the ADS-B in the United States is operational no immediate operational changes are foreseen.

#### **4. Suggested actions**

4.1 The Meeting is invited to:

- a) note the content of this document;
- b) propose the neighbour States that have not done this, to establish the required coordination for the surveillance data sharing; and
- c) timely inform ICAO on the developments of the implementations execution in the new surveillance systems.