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Sixth Eastern Caribbean Network Technical Group (E/CAR/NTG/6) and Fourth Eastern Caribbean Radar Data Sharing Ad-hoc Group (E/CAR/RD/4) Meetings
Miami, United States, 13 - 14 July 2015

Agenda Item 4: Surveillance Sharing Activities
4.5 ADS-B trials: France and Trinidad and Tobago

ADS-B TRIALS: FRANCE AND TRINIDAD AND TOBAGO

(Presented by Trinidad and Tobago)

SUMMARY	
This paper presents the developments in ADS-B in Trinidad and Tobago.	
Action	The suggested action is presented in Section 3.
Strategic Objectives	<ul style="list-style-type: none">• Safety• Air Navigation Capacity and Efficiency
References	<ul style="list-style-type: none">• Second NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/2), Puntarenas, Costa Rica, 1 to 4 June 2015.• ADS-B Implementation Meeting (ADS-B/IMP), 27th to 29th April 2015.• Fifth Eastern Caribbean Network Technical Group (E/CAR/NTG/5) and Third Eastern Caribbean Radar Data Sharing Ad-hoc Group (E/CAR/RD/3) Meetings Guadeloupe, France, 22 to 24 October 2014.• ADS-B/Multilateral Workshop, 19 to 22 May 2014.

1. Introduction

1.1 The benefits from the Automatic Dependent Surveillance Broadcast (ADS-B) are not only for Air Traffic Control (ATC), but also for the airlines, flight crew and passengers. ADS-B OUT eases the flight crew and ATC workload, resulting in fuel and time savings thanks to more efficient approaches, enhancing safety and increasing airport capacity. ADS-B is considered in two parts: ADS-B OUT and ADS-B IN. ADS-B OUT provides a means of automated aircraft parameter transmission between the aircraft and the ATC. ADS-B OUT automatically transmits aircraft parameters from the aircraft to the ATC on ground. There is no need for the pilot's action. ADS-B IN provides automated aircraft parameter transmission between aircraft themselves.

2. Discussion

2.1 Trinidad and Tobago acquired a DO 260A ADS-B receiver with the ATM System upgrade. The receiver and the associated antenna are installed. Initial trials were conducted in October 2013 with the following objectives:

- Verification of the ADS-B static data utilizing both the ICAO flight plan information and radar tracks;
- Verification of the range of the ADS-B antennae via quadrants; and
- To determine if airline operators are filing their correct equipage.

2.2 The analysis of the data showed that approximately 55.5% of the aircraft which operates within the coverage of Piarco ADS-B antenna are ADS-B/Mode S equipped. The percentage of aircraft operators which filed incorrect flight plan is approximately 40%.

2.3 The coverage of the single antenna for overflights ranged from 60 to 200 nm in the various quadrants.

2.4 An internal ADS-B Task Force has been created in addition to attendance to two (2) ICAO Meetings: May 19th to 22nd 2014 - ADS-B/Multilateral Workshop and ADS-B Implementation Meeting (ADS-B/IMP), 27th to 29th April 2015.

2.5 The following matters are under consideration in order to move forward with the implementation of ADS-B in the Piarco FIR:

- Regulations and Regulator Approval
- Service Delivery using ADS-B Out
- ADS-B related AIP information
- Reporting of avionics anomalies
- Operating standards in the FIR (DO 260, DO 260A, DO 260B) and considering that the United States of America (FAA) will adopt DO260B as their standard by 2018
- ATM processing System
- ASTERIX Category and Version to be used

2.6 Discussions have been initiated with a vendor for an ADS-B trial with a receiver at one (1) of the VHF high sites in addition to the one (1) at Piarco. One of the projects planned for realization this year is the implementation of a combination of ADS-B/MLAT to provide surveillance in the South sector and ADS-B in the continental airspace of the Piarco FIR. This could leverage the existing infrastructure at the VHF high sites in the Eastern Caribbean and utilize the existing E/CAR Aeronautical Fixed Services Network as the medium of transport to provide better surveillance in the continental airspace. Where terrain poses a hindrance, multiple receivers could be used to offer better low altitude surveillance. High altitude coverage would be less affected by terrain since the reception is based on line of sight.

2.7 The data obtained from this expanded ADS-B/MLAT project could be incorporated into the Piarco MRT for improved surveillance coverage and redundancy. Aircraft equipage for ADS-B is still not at 100 % in all regions, however for operations in the FAA NAS and European airspace there is a mandate to be compliant (DO-260B) by 2020. Consequently these aircraft would have the required equipage and since a significant amount of the external traffic have US and European origins/destinations ADS-B requirement in the Piarco FIR would be fulfilled.

2.8 The period of testing in States such as Cuba, Honduras and Mexico have been over a period of years. Training of ATCOs in Mexico was conducted over thirty five (35) contact hours per controller. Any implementation in Piarco would have to be preceded by an adequate test period.

2.9 ICAO Cir 326 (3.21) states that ADS-B/MLAT can be used to provide 2.5NM, 3NM or 5NM separation minima in conjunction with radar or as a sole means of surveillance. The current separation minima used in the Piarco continental airspace and APS could be continued with a safety assessment conducted to demonstrate that the safety level would continue to be met. The roadmap to conduct this assessment is included in Ch. 4 of Cir 326. If the airspace is designated as low complexity then there would be no need to undertake technical comparative assessments and the separation minima immediately apply.

3. Suggested Action

3.1 The Meeting is invited to take note of the progress of ADS-B/MLAT activities.