International Civil Aviation Organization
South American Regional Office
Twenty Second Workshop/Meeting of the SAM Implementation Group (SAM/IG/22) - Regional Project RLA/06/901
(Lima, Peru, 19 to 23 November 2018)

SAM/IG/22-IP/19
12/11/2018

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

ADS-B IMPLEMENTATION IN GUYANA

(Presented by Guyana)

SUMMARY

This Information paper presents an update on ADS-B Out implementation within the Georgetown FIR.
Automatic Dependent Surveillance – Broadcast (ADS-B) Out technology is a foundational element to the implementation of the ICAO Global Air Navigation Plan (GANP) and associated Aviation System Block Upgrades (ASBUs). The benefits of ADS-B Out are well-defined, providing substantial safety and capacity benefits to the global aviation system.

Phase 1 – In 2014/2015, Guyana successfully conducted testing and operational trials regarding the provision of ADS-B Service within the Georgetown FIR. This was followed by Implementation of ADS-B Surveillance Service (FL245+) on 12th November 2015.

Phase II – In 2017, the Guyana Civil Aviation Authority published AIP Supplement 03/17 detailing its implementation plan for the provision of Aeronautical Surveillance Service within the lower control area (below F245) including the TMA with the mandatory carrage of ADS-B equipage being March 1st, 2018.

To date, approximately 97% of aircraft transiting the UIR (FL245+) is quipped while approximately 35% of Guyana/Foreign registered on domestic routes in the lower FIR (-FL245) is equipped.

References:

- Doc. 9750 – Global Air Navigation Plan
- CAR/SAM Regional Planning and Implementation Group (GREPECAS) Project C2– *Improve ATM Situational Awareness*

1. Introduction

1.1. At the 38thSession of the ICAO Assembly, Member States endorsed the Global Air Navigation Plan (GANP) and the associated Aviation System Block Upgrades (ASBUs). The ASBUs provide the direction necessary for States and industry to implement and integrate new flight technologies and procedures into their national systems, in a manner compatible globally and incorporated by prioritized phases (or blocks). ADS-B Out is a part of Block 0 in performance improvement area 3: “Optimum Capacity and Flexible Flights – Through Global Collaborative ATM”. Block 0 includes those technologies already in use

in some ICAO States and regions, and considered the critical building blocks needed to recognize future advancements in future blocks.

1.2. ADS-B has been one of the most important, underlying technologies in the Guyana National Air Navigation plan to transform air traffic management from a procedural-based system to an electronic surveillance-based system. ADS-B brings the precision and reliability of surveillance based on satellite-based positioning to Air Traffic Management within the Georgetown FIR, thus enabling the realisation of significant improvements in Safety, Airspace efficiency and reduced CO_2 emissions.

2. Discussion

2.1 Unlike states such as Canada, Australia, and many other countries which primarily use ADS-B Out to provide surveillance services in mostly low-density airspace for ATC separation or as support for existing secondary surveillance radar services in higher density en-route and terminal airspace; the implementation of ADS-B Out enabled Guyana to transition from a purely procedural ATC service to an electronic surveillance based ATC service resulting in improved situational awareness and safety which has been evident in the significant reduction in ATS Incidents in the UIR, increased airspace capacity and efficiency through reduced separation minima and more flexible routing trajectory.

2.2 Implementation of ADS-B Surveillance Service at/above FL245

2.2.1 In 2014, the Guyana Civil Aviation Authority (GCAA) published its intension to conduct testing and operational trials of Aeronautical Surveillance Service within the Georgetown FIR for a period of one year using ADS-B Out. In addition to a safety study, a survey was also conducted to determine the percentage of aircraft operating above FL245 with ADS-B equipped (results was 82%). This was followed by a safety Assessment to Identify hazards associated with the implementation of ADS-B in the UIR (+FL245). The most significant hazards identified were:

a. verifying the accuracy of ADS-B derived position information from INS/IRS and DME/DME Nav systems.
b. Handling non-ADS-B aircraft in an ADS-B environment and
c. Failures which suspended the provision of ADS-B service.

These were mitigated by:

a. Software configuration to display visual cues on the Flight Display System when data quality of equipment performance degrades to unacceptable levels.
b. Training for ATCOs (including simulator sessions)
c. Unit procedures which included crosschecking ADS-B tracks during Identification.

2.2.2 Implementation of requirements for aircraft equipage and the provision of ADS-B Service within the Georgetown FIR (FL245 and above) commenced with effect November 12th, 2015. As of December, 2017 a survey conducted, determined 97% ADS-B equipage for Aircraft operating above FL245.

2.3 Implementation of ADS-B Surveillance Service below FL245 including the TMA

2.3.1 In keeping with Guyana's phased implementation plan and increasing traffic density and complexity, the following steps have been taken regarding implementation of ADS-B Service in the FIR (below FL245);

a. Consultation with local operators including sensitization regarding ADS-B and associated benefits such as: Safety enhancements through increase Flight Crew situation awareness

(ADS-B In), more accurate traffic information from ATC (VFR flights), increased airspace capacity and efficiency through lower separation minimums, reduced cockpit and ATC workload through significant reduction in position reports, shorter response time and smaller area of probability for SAR missions.

b. Expanded ADS-B Coverage through the installation of four additional ground stations coupled with VHF repeaters. (currently being tested)
c. AIP Supplement with timelines for equipage and testing. (timelines to be revised)

3. Conclusion

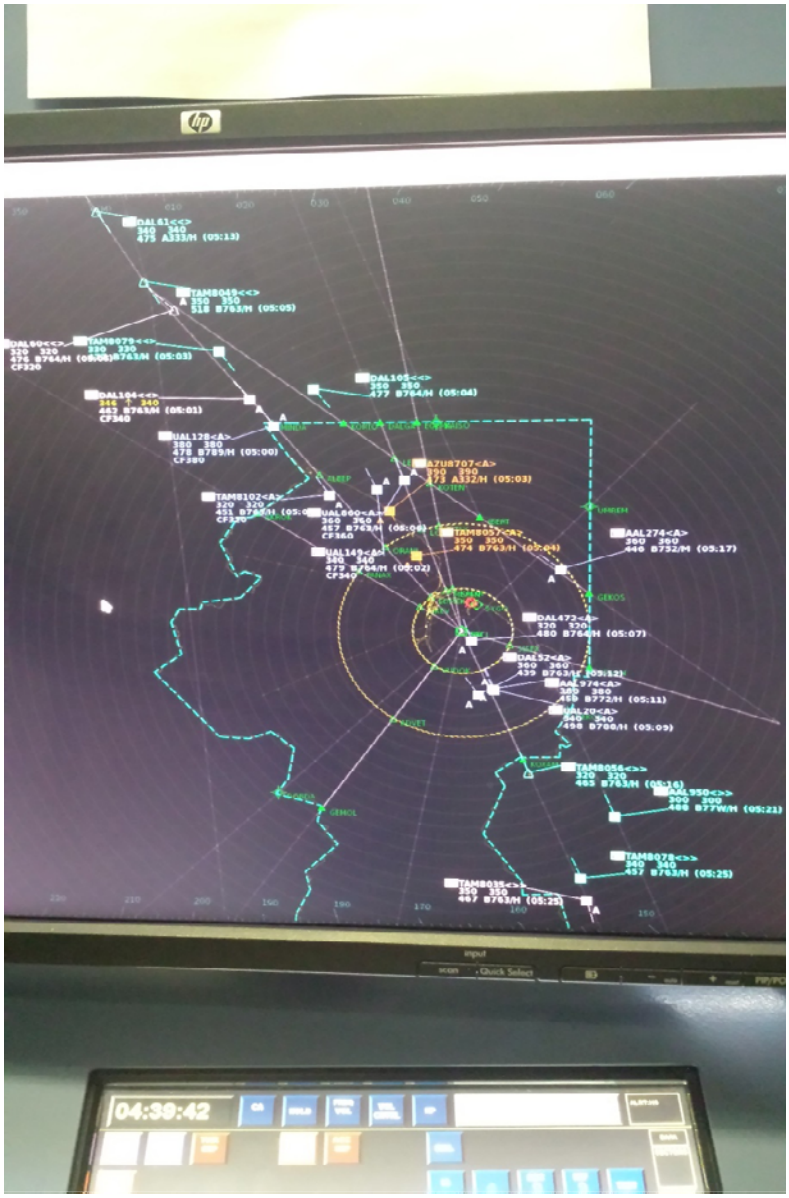
3.1 Guyana has successfully implemented and has been providing Surveillance Service using ADS-B for the past three years with no associated loss of separation reported sixteen (16) ATCOs have been trained so far, and an additional eight (8) ATCOs are currently being trained by the Guyana Civil Aviation Training School.

3.2 Approximately 35% of aircraft operating on domestic are currently equipped, it is anticipated that this will increase to 80% by March 2019 and the implementation of ADS-B Surveillance Service in the lower CTA including the TMA by the 3Q 2019.

4. Suggested Action

4.1 This Meeting is invited to note the contents and conclusions of this information paper.

APPENDIX



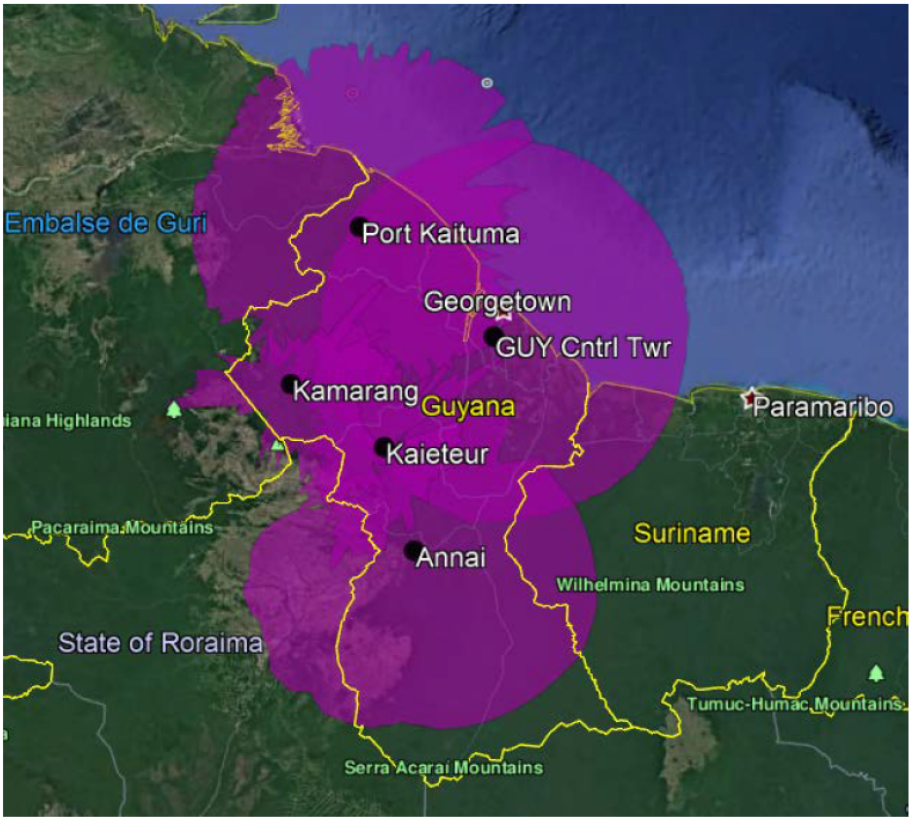


Figure 6 - LOS Coverage - FL100 - Google Earth Screen Shot

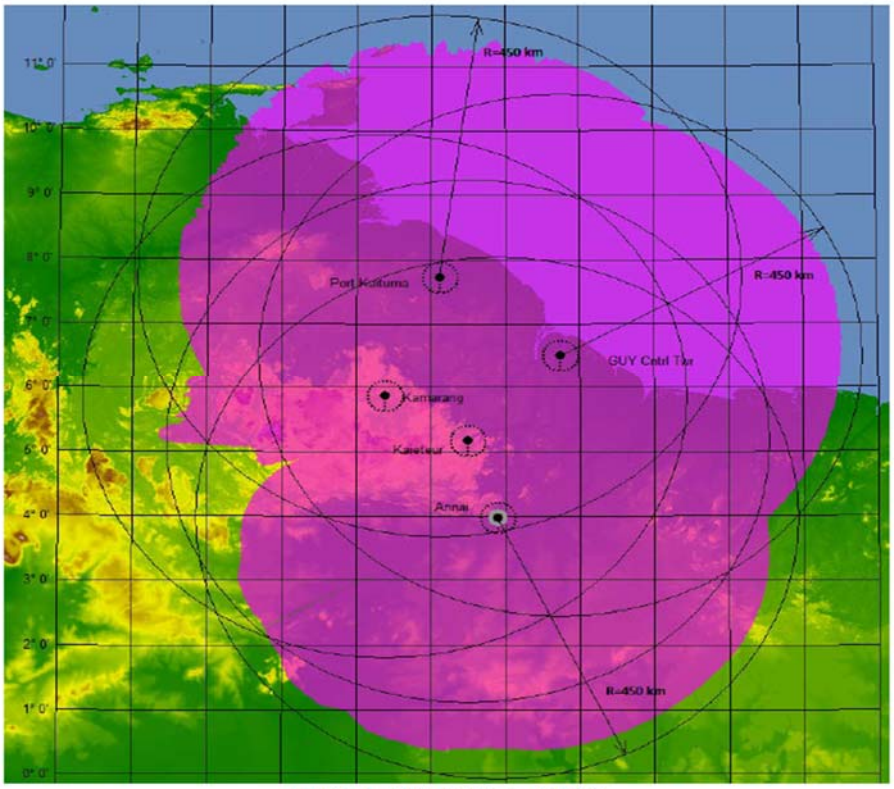


Figure 4 - LOS Coverage - FL300