ICAO

Twenty-Second Meeting of the AFI Planning and Implementation Regional Group
(APIRG/22)
(Accra, Ghana, 29 July – 2 August 2019)

Agenda Item 4: Other Air Navigation Issues
4.4- Initiatives by States & Industry

Operational concept for the implementation of space based ADS-B

(Presented by ASECNA)

SUMMARY	
This information paper presents the operational concept for the implementation of the space based automatic dependent surveillance (ADS-B) in ASECNA area. Action by the Meeting: ***refer to Paragraph 3***	
Strategic Objectives	A & B

1 INTRODUCTION

1.1 To improve air traffic management throughout its airspace, which covers large areas, parts of which are inhospitable regions: oceanic, desert, forest, etc., and which cannot be covered by ground-based surveillance means, ASECNA has chosen to implement space based automatic dependent surveillance broadcast ADS-B.

1.2 The space based automatic dependent surveillance broadcast technology developed by AIREON has undeniable potentialities and advantages over ground-based surveillance means because it eliminates the technical and operational limitations inherent in these surveillance means and makes it possible to ensure global surveillance.

1.3 Global surveillance of all airspace means a significant improvement in the provision of air traffic services in areas where air traffic control is currently based on procedural control and position reports.

2. DISCUSSION

2.1. After concluding an agreement in January 2018 with AIERON on the implementation of satellite ADS-B and the use of surveillance data services in four phases, ASECNA is now entering the final phase, scheduled for early January 2020, of the operational use of satellite ADS-B data for surveillance purposes in its airspace.

2.2 It should be noted that ADS-B by satellite will not be deployed alone but in an environment to be taken into account. To this end, a systemic approach is adopted, which takes into account in

its entirety the components of the system that will have to be put in place for a successful deployment, specifying their characteristics as well as all the operations envisaged.
The components of the system to be set up are the means that will support this deployment: the means of communication, the means or methods of navigation and the traffic management procedures.

2.3 In the context of air traffic management, depending on the means of communication and navigation methods based on PBN operations, the reorganization of airspace and the route network is necessary as well as the introduction of new separation standards.

ASECNA relies on the means of communication already in place: VHF, HF and CPDLC for the aeronautical mobile service, AMHS, AIDC... for the aeronautical fixed service.

The new applicable separation standards are defined according to the type of airspace and in accordance with the new provisions of ICAO PANS/ATM doc 4444 on performance-based separation minima, in addition to the navigation application, the PBCS concept which introduces performance requirements for means of communication RCP and surveillance RSP must be taken into account

2.4 In January 2020, space based ADS-B will be used as means of surveillance in the terrestrial part of ASECNA area. This technology will fill gaps not covered by terrestrial surveillance means and in the other hand will provide redundancy to ensure continuity of services in the event of unavailability of other surveillance means.

In the medium term, this technology will be extended to the oceanic part of ASECNA airspace.

As with any change in the system put in place to ensure the safety of air navigation, this implementation of space based ADS-B is preceded by a safety study.

2.5 The regulatory aspect is taken into account because the national regulations governing the provision of air traffic services do not yet take into account space based ADS-B, and its use as a means of surveillance or to be used to ensure aircraft separation, it must be approved by the Competent Authority. Therefore, the States were involved as stakeholders during the first 3 phases of deployment and were part of the various benchmarking missions carried out in the various States where their ANSPs are already implementing pace based ADS-B.

Then, the harmonization of regulations will eventually make it possible to move towards the Single African Sky where traffic is managed in a seamless manner.

3 ACTION BY THE MEETING

The meeting is invited to :
3.1. take note of the information provided in this information paper;
3.2 Encourage ASECNA initiatives for the implementation of space based ADS-B ;
3.3. Consider the opportunity of introducing space based ADS-Bin the airspace of the AFI region in order to improve air navigation safety.