



ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**Twenty-Third Meeting of the AFI Planning and Implementation Regional Group
(APIRG/23)**
Agenda item 2: Performance Framework for Regional Air Navigation Planning and Implementation
2.2. Outcome of the Third meeting of the APIRG Infrastructure and Information Management Sub-Group (IIM/SG3)
Implementation of space-based ADS-B in ASECNA Member States

(Presented by ASECNA)

SUMMARY

This working paper provides an update on the implementation of space-based ADS B (SB ADS-B) by satellite in ASECNA member states since 1 January 2020 and presents the analysis of the results of the survey carried out during the pre-operational phase.

Providing comprehensive surveillance, SB ADS-B has fostered important initiatives to cooperate with users and other service providers in the implementation of direct routes and advantageous procedures at the height of the COVID 19 pandemic to date.

As a result of the implementation of SB ADS-B, the analysis of the results of the survey conducted in the upper airspace of the Member States shows a very encouraging level of ADS B equipment from the companies in view of the ADS B mandate decided by APIRG 22.

The meeting is invited to;

- a) Take note of the information contained in this WP;
- b) Take note of the willingness of ASECNA member states to support the ADS-B mandate ;
- c) Decide on the assessment in 2021 of the level of ADS-B carry in the region and decide on go or no go in 2023;
- d) Note the need for coordinated action at the AFI region level for the equipment of aircraft with ADS B transponder;
- e) Establish an ad hoc working group to define the terms of the requirement for the carrying of ADS B transponders in the AFI region;

Strategic objectives:	
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1. INTRODUCTION

1.1 The efficient provision of air navigation services in the AFI region requires reliable, available and integrated communication, navigation and surveillance (CNS) systems capable of supporting an efficient, flexible air traffic management system (ATM) to account for the growth of air traffic;

1.2 The Global Air Navigation Plan (GANP) and regional plans, based on the Aviation Systems Block Upgrades (ASBU) provide the framework for harmonizing and synergy of planning and implementation initiatives for all players in the international civil aviation system, particularly in the CNS and ATM areas to make the most of it for a seamless sky for Africa;

1.3 In line with the AFI surveillance strategy and in order to meet the needs of users, states and ANSPs in the AFI region have, in recent years, engaged in major investment programs in SSR and ADS-B radar surveillance, which are seen as means of improving safety and increasing the capacity of their airspace;

1.4 Providing a continuous surveillance service along the routing areas will undoubtedly harmonize air traffic management procedures and significantly reduce the workload of both air traffic controllers and pilots;

1.5 As part of its strategic orientation plan and in line with its member states' decision for 2032, ASECNA has implemented satellite ADS-B surveillance. It now has the visualization of air traffic on both these land and sea spaces.

2. DISCUSSION

2.1 *ADS-B implementation in the AFI region*

2.1.1 In accordance with the GANP and the AFI surveillance strategy, ADS-B will be one of the key means of surveillance in the coming decade in the AFI region. This technology will bring operational benefits in terms of safety, increased capacity and cost-benefit in the coming years.

2.1.2 Several land-based ADS-B deployment programs are being completed or underway in several states in the AFI region. Some other states are in the process of planning the implementation of SB ADS-B by 2020.

2.1.3 These initiatives taken by ANSPs must be accompanied by the equipment of aircraft in ADS-B transponders.

2.1.4 United States of America and Europe have adopted the obligation to carry and operate ADS-B transponders respectively for January and June 2020.

2.1.5 The SB ADS-B technology developed by the industry enables ASECNA to solve the challenges of surveillance in remote airspaces. ASECNA has deployed ADS-B via satellite throughout its space since January 2020. The acquisition of this technology was completed in 2018 and the experiments were conducted over two years. The AFISNET network is the primary vector for transporting data from one site to another and perfectly meets the specifications and performance required for the use of these data.

3. INVESTIGATES THE RATE OF AIRCRAF EQUIPPED WITH TRANSPONDERS COMPATIBLE WITH ADS-B

3.1 During the SB ADS-B implementation pre-operational phase, all ASECNA ACCs investigated on the carrying of transponders on board aircrafts transiting airspace from January 15th, 2020 to April 30th, 2020.

3.2 The initial methodology was to identify all aircraft equipped or not equipped, but given the high number of equipped aircraft, the focus was ultimately on non-equipped aircraft. The model of the fiche used for the survey by ACCs is attached in Appendix 2.

3.3

- 3.4 The purpose of the survey was to establish:
- The rate of carrying ADS-B equipment in ASECNA airspaces, particularly in the upper space (above FL245);
 - The list of non-equipped ADS-B aircraft.

4. RESULTS OF THE INVESTIGATION

4.1 The analysis of the survey results shows a high rate of ADS-B carrying in ASECNA airspace above FL245. An average of 91% of aircraft are ADS-B equipped and this rate reaches 99% in oceanic part (see Appendix 1).

4.2 The list of non-equipped ADS-B aircraft has been forwarded to the Civil Aviation Authorities of the Member States.

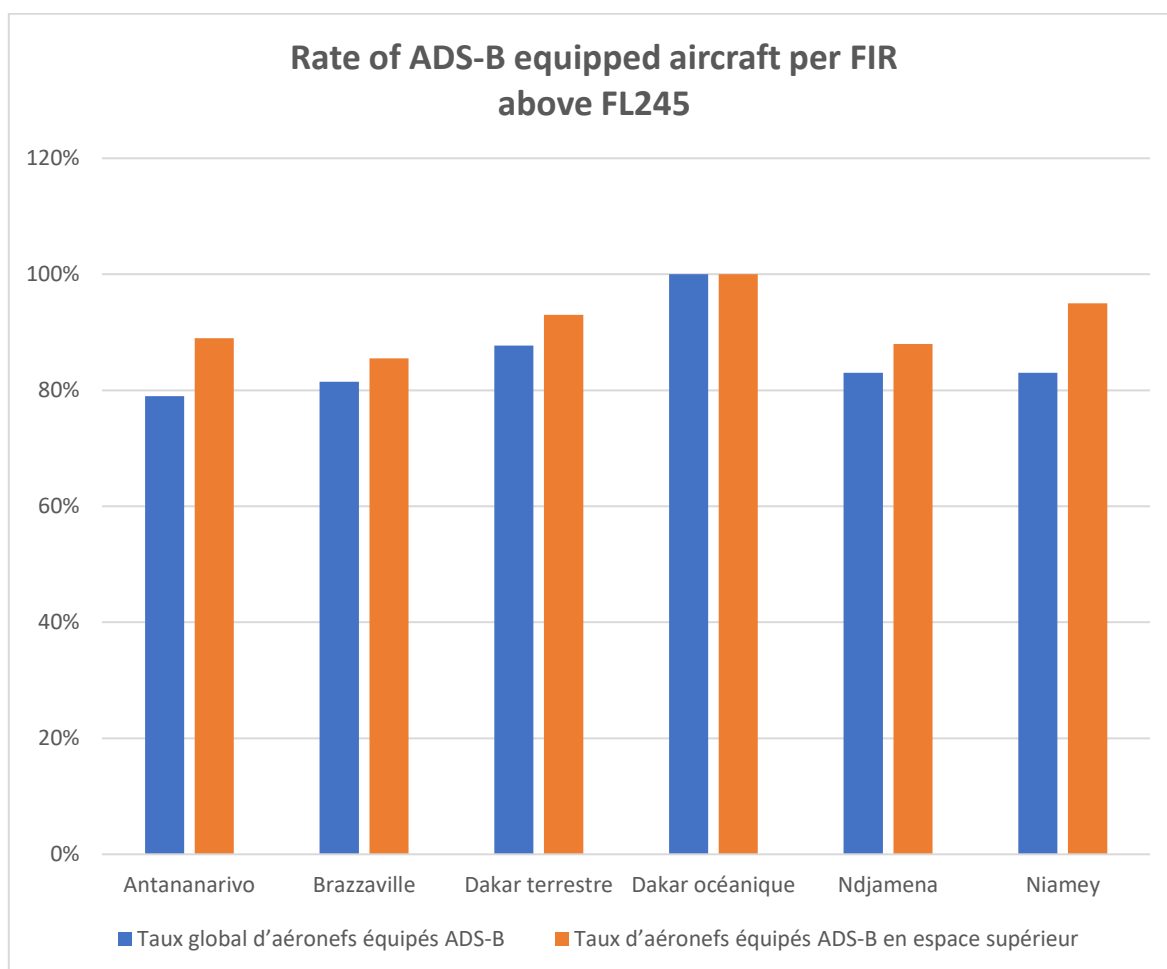
4.3 The immediate benefits of this high rate of aircraft equipped in ADS-B were highlighted in the early months of the COVID-19 pandemic. Indeed, on the request of IATA and as support to airlines for the reduction of operating costs, ASECNA has accepted the planning and execution of flights on direct routes outside the air routes by ADS-B equipped aircraft during the period from April 23 to October 08, 2020. Direct routes have been so published.

5. ACTION

- 5.1 The meeting is invited to;
- a) Take note of the information contained in this note
 - b) Take note of the willingness of ASECNA member states to support the ADS-B mandate;
 - c) Decide on the assessment in 2021 of the level of ADS-B carry in the region and decide on go or no go in 2023;
 - d) Note the need for coordinated action at the AFI region level for ADS B transponder equipment;
 - e) Establish an ad hoc working group to define the requirement for the carriage of ADS-B transponders in the AFI region.

Annexes
Appendix 1: Survey results

FIRs	Rate of aircraft equipped with ADS-B in higher space
Antananarivo	89%
Brazzaville	85,50%
Land Dakar	93%
Ocean Dakar	99,98%
Ndjamena	88%
Niamey	95%



Appendix 2: ADS-B Equipment Carrying Survey Sheet

**MISE EN ŒUVRE DE L'ADS-B SATELLITE
ENQUETE SUR L'EMPORT D'EQUIPEMENTS ADS-B**

CENTRE DE :

ORGANISME :

JOURNEE DU :

N°	Date	Aéronef			Routes	Niveau de vol	Point d'entrée	Point de sortie	Equipé ADS-B : O/N*	Qualité ADS-B sat : S/NS**	Equipé radar SSR : O/N*	Observations
		Type	Immatr.	Exploitant								

* O/N : Oui/Non

** S/NS : Suffisante/Non Suffisante
NS : Signifie un FOM inférieur ou égal à 4