



ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Twenty-Fifth Meeting of the AFI Planning and Implementation Regional Group (APIRG/25)

7 - 11 November 2022

Agenda Item 3: Implementation of air navigation goals, targets and indicators, including the priorities set in the regional air navigation plan

3.6 Other Air Navigation Initiatives

ADS-B mandate in the RVSM airspace of the AFI Region

(Note submitted by ASECNA)

SUMMARY	
<p>This working note focuses on the implementation of Automatic Dependent Surveillance in Broadcast Mode (ADS-B) in the AFI region. It is based on conclusion 5/11 of the RASG-AFI/5 meeting and conclusion 22/40 of APIRG/22 on the continental survey to be carried out to support the decision for the mandate of ADS-B out 1090 Mhz Extended Squitter (ES).</p> <p>Benchmarking in different regions of the world highlights ADS-B mandate planning in several regions of the world: North America – Canada (2019), USA (2020), Australia and New Zealand (2020 et 2021), Region SAM (2023).</p> <p>ASECNA has been using ADS-B surveillance in its airspace since 2020 in addition to Mode S radars and has full coverage of the airspace under its jurisdiction. Radar separation minima are applied in TMA and UTA. ASECNA has organized several VHF coverage surveys that highlight an average payload rate of more than 90% in RVSM airspace.</p> <p>Action by the meeting: The meeting is invited to take note of these information and take the decision on the ADS/B out 1090 ES mandate for the AIRAC date of 15 June 2023.</p>	
REFERENCE(S)	Annex 10 – Aeronautical telecommunications, Annex 11 – Air Traffic Services DOC 4444 – PANS /ATM DOC 9750- GANP 6 th Edition
<i>Strategic Objectives</i>	This working paper relates to the Safety objective (A), Capacity and Efficiency of Air Navigation objective (B), Economic development of air transport (D) and environmental protection (E).

1 INTRODUCTION

- 1.1 The ADS-B-based ATS surveillance system (1090 Mhz ES transponder) is identified as an essential component identical to radar to improve the overall safety of air traffic services and achieve safety and efficiency objectives that bring operational benefits to users. ADS/B out avionics is designated as a catalyst in the global ATM concept to deliver substantial safety and

capacity benefits.

- 1.2 At the standard level, the requirements for ADS-B based surveillance are specified in Annex 10 Volume IV (Chapter 3 and 4). ICAO's Global Air Navigation Plan (GANP) has selected ADS-B as part of ASBU B0-1 ASUR (Block 0 Module 1) to support the provision of air traffic services and operational applications at reduced cost and enhanced surveillance coverage.
- 1.3 At the level of the AFI Region, the mandate to carry the ADS-B out 1090 ES transponder in RVSM space was planned at the APIRG 22 meeting for the AIRAC date of **June 15, 2023** in the conditionality of obtaining 90% of the avionics of equipped airlines.

2. DISCUSSION

2.1. The implementation of ADS-B (ground-based or space-based) in addition to Mode S Secondary Radar to expand aeronautical surveillance coverage, either as redundant to Radar/MLAT coverage, or as the only means of ATS surveillance is widespread across the planet today. DOC 4444 PANS ATM specifies minimum separations based on ATS surveillance systems (Radar, ADS-B, MLAT).

2.2. Several countries in different regions have ADS-B mandate implementation and phasing plans based on airspace classes and volume for aircraft with a maximum take-off weight (MTOW) of 5.7 tons.

2.3. it is evident that the percentage of ADS-B equipped aircraft is critical to the decision-making process regarding the requirement for the ADS-B payload mandate for the AFI region and its use for the provision of air traffic services. Therefore, it was agreed to conduct surveys on ADS-B out equipped aircraft in the AFI region.

2.4. ASECNA has implemented ADS-B in all airspace under its jurisdiction (6 FIRs – 16.1 million km²) since 2020. Since then, it has conducted three surveys on the payload rate of ADS/B equipped aircraft in the Central Africa, West Africa, and Indian Ocean region.

2.5. These surveys, developed from the scoring of controllers in working conditions and the operation of ATS surveillance systems, have made it possible to identify a percentage of ADS-B Out 1090 ES equipped aircraft varying between 90 and 99% depending on the area of operation. The average percentage of ADS-B out equipped aircraft is as follows:

- Oceanic airspace (Dakar Oceanic FIR): 98%
- West Africa continental airspace (Niamey and Dakar continental FIRs): 92 %
- Central Africa continental airspace (Ndjamena and Brazzaville FIR): 91 %
- Indian Ocean airspace (Antananarivo FIR): 92%

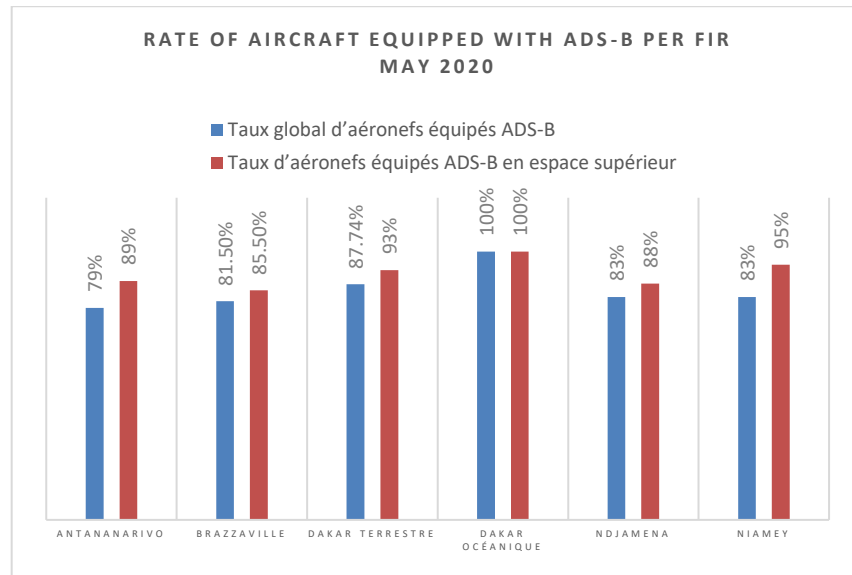
1. ACTION BY THE MEETING

- 3.1 The meeting is invited to take note of the information contained in this working paper
- 3.2 To take the decision on the mandate to carry the ADS-B out 1090 ES transponder for the AIRAC date of **15 June 2023** for the upper airspace above FL 285 with reference to conclusion 22/40 of APIRG/22.
- 3.3 To invite the airlines using the residual aircraft to comply in the interim with a view to extending this mandate to the lower airspace by 2025 in the AFI Region.

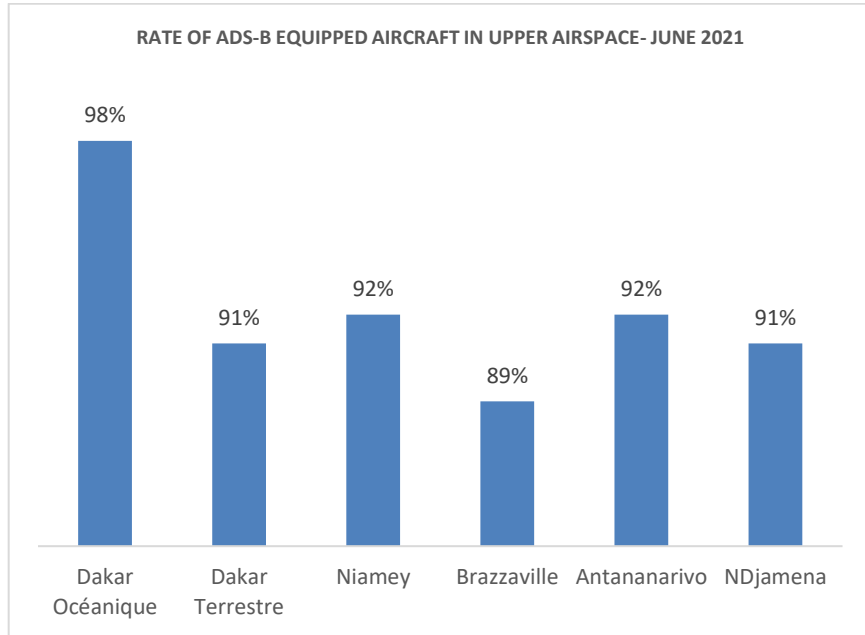
Annex I

Status of aircraft with ADS-B 1090 ES transponder

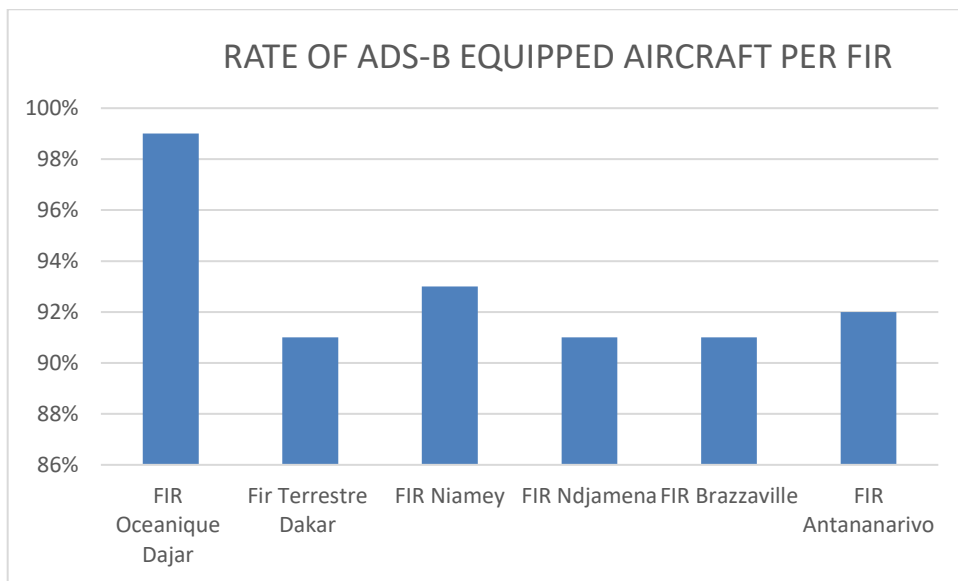
1. Aircraft census carried out by air traffic controllers in May 2020



1. ATC system data extraction– June 2021



1. ATC System Data Extraction – April 2022



ANNEXES

Liste sommaire de quelques aéronefs non équipés

Types aéronefs	Immatriculation
B 737	TNACK, TNAKC, TNAKH, TNAKF, D2TBG, 9XRWJ, 9XRWF, ETAVO
E135	TJAKK, 5YCIM
IL76	86901, RA952, RF7877, 76720
H25B	ZSZIM
A330/200	TCJDP , TCJIR, TCJOD
B737-500	TNAKH, TNAKF,
AN74	RA74035
AN76	RA952
E415	TJKMM
GLEX	D2ANH
E190	5YFFZ
A320	TUTSX TUTSS, YRJOY ZSSZI
CRJ9	9XRWI
FA50	N97KS