ICAO

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(Virtual – 2 to 4 November 2021)

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

STATUS OF IMPLEMENTATION OF THE ASBU BLOCKS MODULES BY ASECNA

(Presented by ASECNA)

SUMMARY
This information paper presents the status of implementation of the ASBU modules in ASECNA Member States in accordance with the last edition (Edition 6) of the GANP document. In particular, it describes the state of implementation of the Block 0 modules as defined in the new ASBU framework as well as the progress made by ASECNA for the achievement and the planification of the Block 1 and Block 2 modules. ***Action by the Meeting:*** The meeting is invited to take note of the information provided in this paper.

Strategic Objectives	A-Safety and B- Air Navigation Capacity and Efficiency

1 INTRODUCTION

1.1 The Global Air Navigation Plan (GANP) and the Aviation System Block Upgrades (ASBU) methodology, provide a framework for future improvements in air navigation technologies and procedures, in a strategic consultative approach that combines specific global performance capabilities and on-time flexibility for the improvements associated with each component.

1.2 The Global Air Navigation Plan Sixth Edition (GANP 6th Ed.) ICAO Document 9750 introduces a number of changes to the format as well as content of the GANP.

1.3 This new Edition of the GANP introduces a number of changes such as the introduction of the Basic Building Block (BBB) Framework, revised Threads; replacement of Performance Improvement Areas with three new groups; new, amended and re-structured modules.

2. DISCUSSION

2.1. The BBB framework describes the basis of any robust air navigation system. It identifies essential services required to be provided by States for international civil aviation in accordance with ICAO Standards and Recommended Practices (SARPs). These essential services are defined in the areas of Aerodromes, Air Traffic Management (ATM), Search and Rescue (SAR), Meteorology (MET) and Information Management (IM). The BBB framework also identifies the end users of these services, as well as the Communications, Navigation and Surveillance (CNS)

infrastructure that are necessary to provide the services and is the baseline representation for service provision and operational improvement.

2.2. Another key concept in the updated framework is the categorization of the ASBU Threads into three overarching groups namely Operational, Information and Technology. All the threads and associated modules have now been structured underneath these three groups, replacing the previously defined Performance Improvement Areas (PIAs) of Airport Operations, Globally Interoperable Systems and Data, Optimum Capacity and Flexible Flights and Efficient Flight Paths.

2.3. There is a need for the AFI Region to adopt and classify by priority the Block 0 modules of this new ASBU framework according to the reality in the continent.

2.4. On ASECNA side, a prior evaluation of the modules of the Bloc 0 has been done taking into account the change in the ASBU framework. The Appendix 1 gives the status of implementation of the modules of block 0 for ASECNA.

2.5. Some modules of the Block 1 are now completely achieved by ASECNA. It is the case with the module ASUR-B1/1 related to the reception of aircraft ADS-B signals from space (SB ADS-B) implemented since 1st January 2020 in the whole ASECNA airspace to provide surveillance coverage in locations where ground stations siting is not possible or not currently provided. It is also the case with the modules DAIM-B1/1 and DAIM-B1/2 related respectively to provision of quality-assured aeronautical data and information and the provision of digital Aeronautical Information Publication (AIP) data sets. The Appendix 2 gives details on the state of implementation of some of the Block 1 modules by ASECNA.

2.6. As far as the Block 2 modules are concerned, many of them are now under study for implementation, such as the modules related to the thread SWIM (SWIM-B2/1, SWIM-B2/2 and SWIM-B2/1). Some other modules of this Block 2 are expected to be taken into account in the next investment plans of the Agency. It is the case with the module ASUR-B2/1 related to evolution of ADS-B and Mode S, to provide new types of data in support of Air Traffic/MET Services and the module NAVS-B2/2 concerning Dual Frequency Multi Constellation (DF MC) SBAS. The Appendix 3 presents the implementation status of some the modules of the Block2.

3 ACTION BY THE MEETING

3.1 The meeting is invited to take note of the information provided in this paper.

APPENDIX 1: ASBU Block 0 modules implementation status for ASECNA in the new ASBU framework

GROUP	THREAD	MODULE	TITLE	IMPLEMENTATION STATUS
OPERATIONNAL	APTA	APTA-B0/1	PBN Approaches (with basic capabilities)	LNAV procedures implemented at 95% of ASECNA airports LNAV/VNAV procedures implemented at 77% of the airports An SBAS implementation program is underway and LPV procedures are expected for all airports by 2025.
		APTA-B0/2	PBN SID and STAR procedures (with basic capabilities)	57% of implementation of PBN SID/STAR
		APTA-B0/3	SBAS/GBAS CAT I precision approach procedures	An SBAS implementation program is underway and CAT-I LPV procedures are expected for main airports by 2025.
		APTA-B0/4	CDO (Basic)	As part of ICAO/ASECNA cooperation, CCO/CDO procedures studies have been undertaken for Libreville and Ouagadougou airports: - CDO/CCO procedure is operational for Libreville airport since 10 September 2020. - CDO/CCO procedure is designed for Ouagadougou airport and is scheduled to be operational in 2022
		APTA-B0/5	CCO (Basic)	
		APTA-B0/6	PBN Helicopter Point in Space (PinS) Operations	Achievement of Procedures Designers Training. Implementation is planned from 2023.
		APTA-B0/7	Performance based aerodrome operating minima – Advanced aircraft	To be planned
		APTA-B0/8	Performance based aerodrome operating minima – Basic aircraft	All the runways of ASECNA airports (the community ones) are instrument runways.
	FRTO	FRTO-B0/1	Direct routing (DCT)	- SSR and ADS -B (Space-based and Ground-based) implementation allowing direct routing - Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) implemented in Antananarivo FIR by ASIO ACG. - Preferred trajectories in the Dakar Oceanic FIR through the implementation of AORRA.
		FRTO-B0/2	Airspace planning and Flexible Use of Airspace (FUA)	Civil/Military coordination agreement implemented in most of countries to facilitate flexible use of airspace based on agreement. However, deployment of automated airspace management (ASM) support systems to manage more flexibly the airspace reservations through a civil-military collaborative decision-making process is not implemented

GROUP	THREAD	MODULE	TITLE	IMPLEMENTATION STATUS
		FRTO-B0/4	Basic conflict detection and conformance monitoring	Backup nets of automated ground based ATM systems based on short-term conflict alerts and minimum safe altitude proximity warning alarms already implemented
	NOPS	**NOPS-B0/1**	Initial integration of collaborative airspace management with air traffic flow management	Study on ATFM implementation in progress
		NOPS-B0/2	Collaborative Network Flight Updates	Study on ATFM implementation in progress
		NOPS-B0/3	Network Operation Planning basic features	Study on ATFM implementation in progress
		NOPS-B0/4	Initial Airport/ATFM slots and A-CDM Network Interface	Study on ATFM implementation in progress
		NOPS-B0/5	Dynamic ATFM slot allocation	Study on ATFM implementation in progress
	SNET	**SNET-B0/1**	Short Term Conflict Alert (STCA)	Backup nets of automated ground based ATM systems based on short-term conflict alerts and minimum safe altitude proximity warning alarms already implemented
		SNET-B0/2	Minimum Safe Altitude Warning (MSAW)	Backup nets of automated ground based ATM systems based on short-term conflict alerts and minimum safe altitude proximity warning alarms already implemented
		SNET-B0/3	Area Proximity Warning (APW)	The Backup nets of automated ground-based ATM systems implemented have this capacity.
		SNET-B0/4	Approach Path Monitoring (APM)	The Backup nets of automated ground-based ATM systems implemented have this capacity.
	SURF	**SURF-B0/1**	Basic ATCO tools to manage traffic during ground operations	- A-SMGCS systems already installed at Dakar-Diass and Nouakchott Oumtounsy airports. - A-SMGCS not planned for any other airport for the moment.
		SURF-B0/2	Comprehensive situational awareness of surface operations	
		SURF-B0/3	Initial ATCO alerting service for surface operations	
INFORMATION	**AMET**	**AMET-B0/1**	Meteorological observations products	- Reception of WAFCS products in all formats. - Cooperation agreement with the St Denis TCCA for better coordination in the monitoring of tropical cyclones.
		AMET-B0/2	Meteorological forecast and warning products	

GROUP	THREAD	MODULE	TITLE	IMPLEMENTATION STATUS
		AMET-B0/3	Climatological and historical meteorological products	- Improvement of the en route watch through the reinforcement of the capacities of the CVM for the detection and the emission of SIGMET envisaged of all the dangerous phenomena not taken into account by the regional centers (VAAC and TCCA). - Wind shear detection systems being installed or acquired at ten aerodromes. - Thunderstorm warning and warning systems in all FIRs
		AMET-B0/4	Dissemination of meteorological products	
	FICE	**FICE-B0/1**	Automated basic inter facility data exchange (AIDC)	ATM systems at ASECNA Member States' main airports have AIDC capability excepted Bangui center, which will be implemented as soon as possible. AIDC is either fully implemented or in trial between most of ASECNA ATC centers and between ASECNA Centers and non ASECNA neighboring centers. Regional AIDC Implementation Project between ASECNA and NAMA Centers (Nigeria), FIR Roberts and ATNS (SADC, NAFISAT), SAM, MID is underway.
TECHNOLOGY	**ASUR**	**ASUR-B0/1**	Automatic Dependent Surveillance – Broadcast (ADS-B)	100% of airspace with ADS-B coverage since January 2020. ADS B surveillance is implemented in all ATC centers except Libreville, Moroni, Bangui and Malabo planned for 2022.
		ASUR-B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	SSR and systems ATM densification implemented in 2017.
	COMI	**COMI-B0/7**	ATS Message Handling System (AMHS)	- Operational implementation of the AMHS in ten (10) Centers (Lomé, Cotonou, Nouakchott, Niamey, Antananarivo, Brazzaville, Bamako, N'Djamena, Ouagadougou and Dakar) including full AMHS operation. - AMHS project on going for the remaining centers - Implementation of the first interregional AMHS link between AFI (Dakar) and SAM (Brasilia) on 25th June 2020
	COMS	**COMS-B0/1**	CPDLC (FANS 1/A & ATN B1) for domestic and procedural airspace	ADS-C / CPDLC implemented.
		COMS-B0/2	ADS-C (FANS 1/A) for procedural airspace	ADS-C / CPDLC implemented.
	NAVS	**NAVS-B0/1**	Ground Based Augmentation Systems (GBAS)	R&D activities in progress
		NAVS-B0/2	Satellite Based Augmentation Systems (SBAS)	An SBAS implementation program is underway and is expected to be operational by 2025 for all phases of flight.
		NAVS-B0/4	Navigation Minimal Operating Networks (Nav. MON)	Planned to be implemented from 2028

APPENDIX 2: Implementation status by ASECNA of some modules of the block 1 of the new ASBU framework

MODULE	TITLE	GROUP	IMPLEMENTATION STATUS
ASUR-B1/1	Reception of aircraft ADS-B signals from space (SB ADS-B)	Technology	Implemented
DAIM-B1/1	Provision of quality-assured aeronautical data and information	Information	
DAIM-B1/2	Provision of digital Aeronautical Information Publication (AIP) data sets	Information	
DAIM-B1/3	Provision of digital terrain data sets	Information	Under study
DAIM-B1/4	Provision of digital obstacle data sets	Information	
DAIM-B1/5	Provision of digital aerodrome mapping data sets	Information	
DAIM-B1/6	Provision of digital instrument flight procedure data sets	Information	
DAIM-B1/7	NOTAM improvements	Information	
COMS-B1/1:	PBCS approved CPDLC (FANS 1/A+) for domestic and procedural airspace	Technology	
COMS-B1/2	PBCS approved ADS-C (FANS 1/A+) for procedural airspace	Technology	
COMS-B1/3	SATVOICE (incl. routine communications) for procedural airspace	Technology	
CSEP-B1/3	Performance Based Longitudinal Separation Minima	Operational	
CSEP-B1/4	Performance Based Lateral Separation Minima	Operational	
FRTO-B1/1	Free Route Airspace (FRA)	Operational	
RATS-B1/1	Remotely Operated Aerodrome Air Traffic Services	Operational	To be planned in the next investment plan (2023-2027)

APPENDIX 3: Implementation status by ASECNA of some modules of the block 2 of the new ASBU framework

MODULE	TITLE	GROUP	IMPLEMENTATION STATUS
SWIM-B2/1	Information service provision	Information	Under study
SWIM-B2/2	Information service consumption	Information	
SWIM-B2/3	SWIM registry	Information	
ASUR-B2/1	Evolution of ADS-B and Mode S,	Operational	To be planned in the next investment plans (2023-2027 and 2028-2032)
NAVS-B2/2	Dual Frequency Multi Constellation (DF MC) SBAS	Technology	