INTERNATIONAL CIVIL AVIATION ORGANIZATION

**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
TWENTIETH MEETING (APIRG/20)
Yamoussoukro, Cote d'Ivoire (30 November – 2 December 2015)**

Agenda Item 2: Performance Framework for Regional Air Navigation Planning and Implementation

STATUS OF IMPLEMENTATION OF THE ICAO AVIATION SYSTEM BLOCK UPGRADES (ASBU)

(Presented by South Africa)

SUMMARY
This information paper serves to inform states of the current status of implementation of the ICAO Aviation System Block Upgrades (ASBU) for South Africa as adopted in accordance with the Global Air Navigation Plan (GANP) and regional performance objectives.
REFERENCE(S): ▪ APIRG 19 - CONCLUSION 06: Adoption of AFI Regional Air Navigation System implementation plan aligned with the ICAO Aviation System Block Upgrade (ASBU)
Strategic Objective(s) — This Information Paper is related to Strategic Objectives **A, B and E.**

1. INTRODUCTION

1.1 The Global Air Navigation Plan (GANP) represents a rolling, 15 year strategic methodology which leverages existing technologies and anticipates future developments based on State/Industry agreed operational objectives. The GANP was revised in 2013 to include the new Aviation System Block Upgrades (ASBU).

1.2 South Africa agreed to implement all ICAO ASBU Block 0 and Block 1 modules where operational requirements necessitate it.

1.3 South Africa has drawn up and adopted a high level ASBU Implementation Schedule which defines the activities that have been (block 0) and will be (block 1) adopted under the documented Performance Improvement Areas to satisfy the need for compliance with the prescribed requirements as set out for the Aviation System Block Upgrades by ICAO in the GANP and conclusions of APIRG19.

1.4 Details of the high level description of activities as listed in the Implementation Plan has been set out in Roadmaps for both ATM and the accompanied Technologies sections.

2. DISCUSSION

2.1 As per conclusion 19/06 (d) South Africa has participated in workshops relating to the implementation of the ASBU Block 0 Modules which included discussions relating but not limited to Safety Key Performance Areas. The latest workshop was held in Kenya, Nairobi 12-16 October 2015 with participation from Kenya, Tanzania, Rwanda and Uganda together with South Africa.

2.2 South Africa has aligned target dates for prescribed activities listed in the implementation plan with existing regional programmes aimed at enhancing air navigation capacity and efficiency and aviation safety.

2.3 The implementation plan described above as constructed and adopted by South Africa for Block 0 of the Aviation System Block Upgrades (ASBU) has been attached as Appendix A to this information paper.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the contents of this information paper and **attached** implementation plan

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APPENDIX A

AVIATION SYSTEM BLOCK UPGRADE IMPLEMENTATION PLAN

Module	Performance Improvement Area	Module Title	Module Description	ATNS Implementation Elements	ATNS Dates
B0-APTA	Airport Operations	Optimization of Approach Procedures including Vertical Guidance	The use of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) procedures to enhance the reliability and predictability of approaches to runways, thus increasing safety, accessibility and efficiency. This is possible through the application of basic global navigation satellite system (GNSS), Baro-vertical navigation (VNAV), satellite-based augmentation system (SBAS) and GLS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.	Implementation of GNSS (Phase 1 - Monitoring) RNP Approach (Baro-VNAV) RNAV 1 and 2 SID/STAR at International Airports	2018/2019 Completed for block 0 Completed for block 0
B0-WAKE	Airport Operations	Increased Runway Throughput through Optimized Wake Turbulence Separation	Improves throughput on departure and arrival runways through optimized wake turbulence separation minima, revised aircraft wake turbulence categories and procedures.	3NM lateral separation introduced at FAOR in TMA in 2011	Completed
B0-SURF	Airport Operations	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	Basic advanced-surface movement guidance and control systems (A-SMGCS) provides surveillance and alerting of movements of both aircraft and vehicles at the aerodrome, thus improving runway/aerodrome safety. Automatic dependent surveillance-broadcast (ADS-B) information is used when available (ADS-B APT).	Airport Surface Movement Indicators A-SMGCS implemented at FAOR and FACT	2020/2021 Completed
B0-ACDM	Airport Operations	Improved Airport Operations through Airport-CDM	Implements collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and manoeuvring areas and enhance safety, efficiency and situational awareness.	Implementation elements include DATIS Replacement, ACC Relocation , Airport Surface Movement Indicators, ATFM (CAMU Phase 2), ASMGCS and VCCS upgrades Collaborative applications that allow sharing of surface operations data among the different stakeholders on the airport implemented at FACT, FAOR and FALE	2016 - 2021 Completed
B0-RSEQ	Airport Operations	Improve Traffic Flow through Sequencing (AMAN/DMAN)	Manage arrivals and departures (including time-based metering) to and from a multi-runway aerodrome or locations with multiple dependent runways at closely proximate aerodromes, to efficiently utilize the inherent runway capacity.	Implementation elements include ACC Relocation, Replacement of Approach Radars (S-Band1 - 2000) & S-Band2), Airport Surface Movement Indicators, SMGCS Upgrade, AMAN and DMAN implementation	2015/2023 Completed

Module	Performance Improvement Area	Module Title	Module Description	ATNS Implementation Elements	ATNS Dates
B0-FICE	Globally Interoperable Systems and Data	Increased Interoperability, Efficiency and Capacity though Ground-Ground Integration	Improves coordination between air traffic service units (ATSUs) by using ATS interfacility data communication (AIDC) defined by ICAO's Manual of Air Traffic Services Data Link Applications (Doc 9694). The transfer of communication in a data link environment improves the efficiency of this process, particularly for oceanic ATSUs.	Implementation elements include ACC Relocation, ATFM (CAMU Phase 2) AIDC implemented within all RSA FIR's.	2016/2023 Completed
B0-DAIM	Globally Interoperable Systems and Data	Service Improvement through Digital Aeronautical Information Management	The initial introduction of digital processing and management of information through, aeronautical information service (AIS)/aeronautical information management (AIM) implementation, use of aeronautical exchange model (AIXM), migration to electronic aeronautical information publication (AIP and better quality and availability of data.	Implementation elements include AFTN/AMHS review, ACC Relocation, Migration of AIS services (Digital NOTAM) CHAIN implemented (2011) FPL2012 implemented Centralised AIXM database implemented AIP generate using AIXM database Data Exchanges between internal systems in AIXM	2016/2023 Completed Completed Completed Completed Completed
B0-AMET	Globally Interoperable Systems and Data	Meteorological Information Supporting Enhanced Operational Efficiency and Safety	Global, regional and local meteorological information: a) Forecasts provided by world area forecast centres (WAFCs), volcanic ash advisory centres (VAACs) and tropical cyclone advisory centres (TCAC). b) Aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome, including wind shear. c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations. This information supports flexible airspace management, improved situational awareness and collaborative decision-making, and dynamically-optimized flight trajectory planning. This Module includes elements which should be viewed as a subset of all available meteorological information that can be used to support enhanced operational efficiency and safety	Implementation elements include DATIS Replacement, ACC Relocation, ATFM (CAMU Phase 2) Weather feed into ATC systems (ATCC and ATFM) implemented. Part of ATFM within RSA FIR's The implementation of the priority elements with respect to SIGMET, Aerodrome Warnings, wind shear and aerodrome forecast are in place. This is a generic procedure which applies to all international aerodromes. Are currently drawing up the implementation plan with respect to all MET aspects covered under the ASBU.	2015/2021 Completed

Module	Performance Improvement Area	Module Title	Module Description	ATNS Implementation Elements	ATNS Dates
B0-FRTO	Optimum Capacity and Flexible Flights	Improved Operations through Enhanced En-route Trajectories	Allow the use of airspace which would otherwise be segregated (i.e. Special Use Airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight lengths and fuel burn	Implementation elements include SSR Replacement (2002) NAVAIDS, ATFM (CAMU Phase 2), FUA, Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) and User Preferred Routes (UPR) in oceanic airspace implemented	2015/2022 Completed
B0-NOPS	Optimum Capacity and Flexible Flights	Improved Flow Performance through Planning based on a Network-wide view	Air traffic flow management (ATFM) is used to manage the flow of traffic in a way that minimizes delays and maximizes the use of the entire airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or flight information region (FIR)/sector boundaries and reroute traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.	Implementation elements include ACC Relocation, SSR Replacement (2002), ATFM (CAMU Phase 2) Additional capacity has been catered for in high visibility events and the current CAMU tool in addition to AMAN is currently successfully managing the traffic flow	2015/2020 Completed
B0-ASUR	Optimum Capacity and Flexible Flights	Initial Capability for Ground Surveillance	Provides initial capability for lower cost ground surveillance supported by new technologies such as ADS-B OUT and wide area multilateration (MLAT) systems. This capability will be expressed in various ATM services, e.g. traffic information, search and rescue and separation provision.	Implementation of MLAT (WAM)	2017
B0-ASEP	Optimum Capacity and Flexible Flights	Air Traffic Situational Awareness (ATSA)	Two air traffic situational awareness (ATSA) applications which will enhance safety and efficiency by providing pilots with the means to enhance traffic situational awareness and achieve quicker visual acquisition of targets: a) AIRB (basic airborne situational awareness during flight operations). b) VSA (visual separation on approach).	Implementation elements include ACC Relocation, Replacement of Radars (S-Band1 - 2000) & (S-Band2) SSR Replacement (2002)	2015/2023
B0-OPFL	Optimum Capacity and Flexible Flights	Improved Access to Optimum Flight Levels through Climb/Descent Procedures using ADS B)	Enables aircraft to reach a more satisfactory flight level for flight efficiency or to avoid turbulence for safety. The main benefit of ITP is significant fuel savings and the uplift of greater payloads.	Implementation elements include ACC Relocation and GNSS Implementation (Phase 2 - GBAS)	2019/2023

Module	Performance Improvement Area	Module Title	Module Description	ATNS Implementation Elements	ATNS Dates
B0-ACAS	Optimum Capacity and Flexible Flights	Airborne Collision Avoidance Systems (ACAS) Improvements	Provides short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation.	Implementation elements include GNSS Implementation (Phase 2 - GBAS) Short Term Collision Avoidance (STCA) system has been employed	2019/2021 Completed
B0-SNET	Optimum Capacity and Flexible Flights	Increased Effectiveness of Ground-Based Safety Nets	Monitors the operational environment during airborne phases of flight to provide timely alerts on the ground of an increased risk to flight safety. In this case, short-term conflict alert, area proximity warnings and minimum safe altitude warnings are proposed. Ground-based safety nets make an essential contribution to safety and remain required as long as the operational concept remains human centred.	Implementation elements include ACC Relocation , Replacement of Radars (S-Band1 - 2000) , SSR Replacement (2002) Ground-based safety nets implemented Short Term Conflict Alert, Area Proximity Warnings and Minimum Safe Altitude Warnings have been implemented.	2015/2023 Completed Completed
B0-CDO	Efficient Flight Paths	Improved Flexibility and Efficiency in Descent Profiles using Continuous Descent Operations (CDOs)	Performance-based airspace and arrival procedures allowing aircraft to fly their optimum profile using continuous descent operations (CDOs). This will optimize throughput, allow fuel efficient descent profiles, and increase capacity in terminal areas	Implementation elements include ACC Relocation, Replacement of Radars (S-Band1 - 2000) & (S-Band2), SSR Replacement (2002), Terminal NAVAID (on airport) Replacements 6 CDO procedures at one regional airport	2015/2023 End 2015
B0-TBO	Efficient Flight Paths	Improved Safety and Efficiency through the Initial Application of Data Link En-route	Implements an initial set of data link applications for surveillance and communications in air traffic control (ATC), supporting flexible routing, reduced separation and improved safety.	Implementation elements include ACC Relocation , SSR Replacement (2002) ADS/CPDLC implemented FUA, Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) and User Preferred Routes (UPR) in oceanic airspace implemented	2017/2023 Completed Completed
B0-CCO	Efficient Flight Paths	Improved Flexibility and Efficiency Departure Profiles – Continuous Climb Operations (CCO)	Implements continuous climb operations (CCO) in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles, and increase capacity at congested terminal areas	Implementation elements include ACC Relocation, Replacement of Radars (S-Band1 - 2000) & (S-Band2), GNSS Implementation (Phase 2), Terminal NAVAID (on airport) Replacements, En-Route DME-DME Network Establishment 6 CDO procedures at one regional airport	2015/2023 End 2015

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