



**INTERNATIONAL CIVIL AVIATION ORGANISATION**  
**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG)**  
**METEOROLOGY SUB-GROUP TWELFTH MEETING (MET/SG/12)**

*(Dakar, Senegal, 1 – 5 December 2014)*

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**Agenda Item 6: Linkage of remaining tasks of the MET/SG with Aviation System Block Upgrades (ASBU) Modules B0 and Regional Performance objectives for MET**

**LINKAGE OF REMAINING TASKS OF THE MET/SG WITH  
AFI ASBU B0-AMET AND REGIONAL PERFORMANCE OBJECTIVES**

*(Presented by the Secretariat)*

**SUMMARY**

This paper reviews the AFI Air Navigation System Implementation Action Plan including AFI regional performance-based planning framework and suggests an alignment of the MET related Performance Framework Forms (PFFs) with Module B0-AMET of the Aviation System Block Upgrades (ASBU) and the remaining tasks of the Meteorological Sub-Group (MET/SG) to be implemented through the project management approach, by the Infrastructure and Information Management Sub-Group (IIM/SG) of APIRG.

Action by the Meeting is in paragraph 3

**References:** APIRG/19 Report, Appendix 3-0A: AFI Air Navigation System Action Plan.

**1. Introduction**

1.1 The meeting is informed that APIRG/19 meeting adopted the Air Navigation System Implementation Action Plan for the Africa and Indian-ocean (AFI) region which establishes the prioritization of Aviation System Block Upgrades (ASBU) Block0 Modules, proposes the Air Navigation Report Forms (ANRFs) and defines the performance-based planning framework for the AFI region.

1.2 Based on the AFI ANRFs and performance-based planning framework, this paper suggests an alignment of the MET related AFI regional Performance Framework Forms (PFF) with Module B0-AMET of the Aviation System Block Upgrades (ASBU) and the remaining tasks of the Meteorological Sub-Group (MET/SG) to be implemented through project management approach, by the Infrastructure and Information Management Sub-Group (IIM/SG) of APIRG..

**2. Discussions**

**2.1 Categorization of ASBU Block-0 Modules for the AFI Region**

2.1.1 The meeting may recall that the Global Air Navigation Plan (Doc 9750, GANP) was developed to assist States and regional planning groups in identifying the most appropriate operational improvements to achieve near- and medium-term benefits on the basis of current and foreseen aircraft capabilities and ATM infrastructure while the Global Air Traffic Management Operational Concept (Doc 9854) provided the overall vision of a performance based ATM system.

2.1.2 The meeting may also recall that ASBU blocks are defined in the 4<sup>th</sup> edition of the Global Air Navigation Plan (Doc 9750, GANP) as follows: Block0: modules available from 2013 to 2018, Block1: modules to be available from 2018 to 2023, Block2: modules to be available from 2023 to 2028, Block3: from 2028. Modules related to MET are in the Performance Improvement Area 2, “*Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management*”, and are defined as follows:

- ✓ **B0-AMET:** Improved Meteorological Information Module: Meteorological information supporting enhanced operational efficiency and safety;
- ✓ **B1-AMET:** Enhanced Operational Decisions through Integrated Meteorological Information; and
- ✓ **B3-AMET:** Enhanced Operational Decisions through Integrated Meteorological Information.

2.1.3 The meeting is informed that the objective of module categorization developed by APIRG/19 in the AFI Air Navigation System Implementation Action Plan, aims at ranking each module in terms of implementation priority. On the basis of operational requirements and taking into benefits associated, AFI region has chosen all 18 Block-0 Modules for implementation. The categories of 18 Block 0 Modules as defined by APIRG/19 in **Appendix A** to this paper are as follows:

- a) **Essential (E)** category: These are the ASBU modules that provide substantial contribution towards global interoperability, safety or regularity. The five (5) Modules for all States of AFI region are FICE, DATM; ACAS, FRTO and APTA
- b) **Desirable (D)** category: These are the ASBU modules that, because of their strong business and/or safety case, are recommended for implementation almost everywhere. The eight (8) Modules for all States of AFI region are ACDM, NOPS, ASUR, SNET, **AMET**, TBO, CDO, and CCO
- c) **Specific (S)** category: These are the ASBU modules that are recommended for implementation to address a particular operational environment in specific countries of AFI region (for example South Africa). The (3) Modules are OPFL, ASEP and WAKE.
- d) **Optional (O)** category: These are the ASBU modules that address particular operational requirements in specific countries of AFI region and provide additional benefits that may not be common everywhere. The two (2) Modules are SURF and RSEQ.

## 2.2 *Prioritization of ASBU Block-0 Modules for the AFI Region*

2.2.1 The MET/SG meeting is informed that APIRG/19 meeting defined two (2) module priorities which allocation is based on the following criteria.

- ✓ **Priority-1:** immediate implementation;
- ✓ **Priority-2:** recommended implementation.

2.2.2 Although AFI region has categorized all 18 Block-0 Modules for its implementation, only 9 Modules will have priority-1 as it covers most of the AFI States. Remaining Modules are priority-2 and applies to only specific State (s) of AFI region. The list of Block-0 modules is provided in **Appendix B** to this paper, with suggested allocated priority for implementation within the AFI Region.

## 2.3 *Air Navigation Report Forms*

2.3.1 The meeting is informed that Air Navigation Report Form (ANRF), a revised version of the Performance Framework Form (PFF), is a customized tool for Aviation System Block Upgrades (ASBU) Modules which is recommended for application for setting planning targets, monitoring implementation, identifying challenges, measuring implementation/performance and reporting. The results of the ANRF will be analyzed by ICAO and aviation partners and utilized in developing the Regional Performance Dashboard and the Annual Global Air Navigation Report.

2.3.2 The meeting may be aware that expectations/benefits to the ATM community are referred to eleven (11) Key Performance Areas (KPA) (access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security). The KPAs are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. However, out of these 11 KPAs, for the present, only 5 have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety.

2.3.3 The KPAs applicable to respective ASBU module have been identified by the marking Y (Yes) or N (No) against them. The proposed ANRF related to B0-AMET in the AFI Air Navigation System Implementation Action Plan, was reviewed by the Secretariat as indicated in **Appendix C** to this paper, based on ASBU module B0-AMET elements (GANP, Doc 9750) and on the remaining tasks of the MET/SG as defined in WP/4, for the attention of the meeting. In this regard, the meeting may wish to formulate the following draft conclusion:

**Draft Conclusion 12/XX: AFI Air Navigation Report Form (ANRF) for B0-AMET Module**

**That, the updated Air Navigation Report Form (ANRF) given in Appendix C to this paper, is endorsed as the updated ANRF for ASBU B0-AMET module in the AFI region.**

#### **2.4 *Performance-based Planning Framework in the AFI Region***

2.4.1 The meeting is informed that APIRG/19 aligned the performance-based approach for regional and national air navigation planning in the AFI Region adopted by the Special Regional Air Navigation Meeting (Durban, South Africa, November 2008), with the Global Air Navigation Plan (Doc 9750, GANP).

2.4.2 The MET/SG is further informed that several other ICAO documents are available to support the planning process including the Manual on Air Traffic Management System Requirements (Doc 9882) which converted the overall vision of the operational concept into material specifying the functional evolution of ATM, and the Manual on Global Performance of the Air Navigation System (Doc 9883) which provided a broad overview of the tasks that needed to be undertaken to transition to such a system.

2.4.3 The meeting is also informed that the APIRG uses the performance framework forms (PFFs) developed by the ICAO Special AFI RAN of 2008 as amended from time to time through the regional planning process, to identify individual parties responsible for achieving the performance objectives as well as to establish timeframes for implementation. As indicated in the AFI Air Navigation System Implementation Action Plan, these PFFs need to be reviewed and aligned with the ICAO Aviation System Block Upgrade (ASBU) Block-0 Modules. Therefore, based on the elements of the AFI ASBU B0-AMET Air Navigation Report Form (ANRF) in Appendix C, the Secretariat is proposing an amendment to the AFI Performance Framework Form (PFFs) as given in **Appendix D** to this paper, for review by the meeting. In this regard, the meeting may wish to formulate the following draft conclusion:

**Draft Conclusion 12/XX: AFI Performance Framework Form (PFFs) for B0-AMET**

**That, the updated Performance Framework Form (PFFs) given in Appendix D to this paper, is endorsed as the PFFs for ASBU B0-AMET in the AFI region.**

#### **2.5 *Relationship between MET related AFI PFFs and AFI ASBU B0-AMET Region***

2.5.1 The ASBU module Block0-AMET (B0-AMET) “*Meteorological information supporting enhanced operational efficiency and safety*” is defined in the ICAO Global Air Navigation Plan (Doc 9750) to be a Global, regional and local meteorological information provided by world area forecast centres, volcanic ash advisory centres, tropical cyclone advisory centres, aerodrome meteorological offices and meteorological watch offices in support of:

- ✓ flexible airspace management;
- ✓ improved situational awareness and collaborative decision-making; and
- ✓ dynamically optimized flight trajectory planning.

2.5.2 The meeting may note that aeronautical meteorology (MET) is a thread running through the aviation system block upgrade (ASBU) performance improvement area titled “Globally Interoperable Systems and Data” and that, through future system-wide information management (SWIM), MET information would be a key enabler to the realization of a globally harmonized, interoperable air traffic management system. Therefore, Recommendation 1/1 of the 2014 Meteorology Divisional Meeting (MET/14) approved by ICAO Air Navigation Commission (ANC), called for updating the GANP and ASBU methodology to reflect ASBU MET module dependencies with other modules. The MET/14 provided a list of non-MET specific ASBU modules (*Appendix B to MET/14-IP/1*) given in **Appendix E-1** to this paper, where aeronautical MET service will be of relevance.

2.5.3 Based on the relationship between ASBU module B0-AMET highlighted in yellow in Appendix E-1 to this paper and the updated Performance Framework Form (PFFs) given in Appendix D to this paper, the Secretariat has suggested an updated Appendix C of the Air Navigation System Implementation Action Plan proposed by APIRG/19 meeting. In this regard, the meeting may wish to formulate the following draft decision:

**Draft Decision 12/XX: Relationship between ASBU B0-AMET and MET related Performance Framework Form (PFFs) in the AFI Region**

**That, the updated Table given in Appendix E to this paper, is endorsed as the relationship between ASBU B0-AMET and MET related Performance Framework Form (PFFs) in the AFI region.**

**3 Action by the Meeting**

3.1 The MET/SG is invited to:

- a) Note the information provided in this paper ; and
- b) decide on the draft Decision and draft Conclusions proposed for the Sub-Group’s consideration.

- ✓ **Appendix A-** Categorization of ASBU Block-0 Modules for the AFI Region
- ✓ **Appendix B-** AFI ASBU Block-0 Priority
- ✓ **Appendix C-** AFI Air Navigation Report Form (ANRF) for B0-AMET
- ✓ **Appendix D-** AFI Performance Framework Form (PFFs) for B0-AMET

- ✓ **Appendix E** - Relationship between ASBU B0-AMET and MET related Performance Framework Form (PFFs) in the AFI Region
- ✓ **Appendix E** - non-MET specific ASBU modules where aeronautical MET service will be of relevance

**APPENDIX A: CATEGORIZATION OF ASBU BLOCK-0 MODULES FOR THE AFI REGION**

Performance Improvement Areas (PIA)	Performance Improvement Area Name	Module	Module Name
PIA 1	Airport Operations	B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)
		B0-APTA	Optimization of Approach Procedures including vertical guidance
		B0-WAKE	Increased Runway Throughput through optimized Wake Turbulence Separation
		B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)
		B0-ACDM	Improved Airport Operations through Airport-CDM
PIA 2	Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management	B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration
		B0-DATM	Service Improvement through Digital Aeronautical Information Management
		B0-AMET	Meteorological information supporting enhanced operational efficiency and safety
PIA 3	Optimum Capacity and Flexible Flights – Through Global Collaborative ATM	B0-FRTO	Improved Operations through Enhanced En-Route Trajectories
		B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view
		B0-ASUR	Initial capability for ground surveillance
		B0-ASEP	Air Traffic Situational Awareness(ATSA)
		B0-OPFL	Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B
		B0-ACAS	ACAS Improvements
		B0-SNET	Increased Effectiveness of Ground-Based Safety Nets
PIA 4	Efficient Flight Path – Through Trajectory-based Operations	B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)
		B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route
		B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)

**APPENDIX B: AFI ASBU BLOCK-0 PRIORITY**

<b>PIA</b>	<b>Module Description</b>	<b>Module</b>	<b>Priority</b>
PIA 1	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	B0-RSEQ	2
	Optimization of Approach Procedures including vertical guidance	B0-APTA	1
	Increased Runway Throughput through optimized Wake Turbulence Separation	B0-WAKE	2
	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	B0-SURF	2
	Improved Airport Operations through Airport-CDM	B0-ACDM	1
PIA 2	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	B0-FICE	1
	Service Improvement through Digital Aeronautical Information Management	B0-DAIM	1
	Meteorological information supporting enhanced operational efficiency and safety	B0-AMET	1
PIA 3	Improved Operations through Enhanced En-Route Trajectories	B0-FRTO	1
	Improved Flow Performance through Planning based on a Network-Wide view	B0-NOPS	2
	Initial capability for ground surveillance	B0-ASUR	2
	Air Traffic Situational Awareness(ATSA)	B0- ASEP	2
	Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B	B0- OPFL	2
	ACAS Improvements	B0-ACAS	1
	Increased Effectiveness of Ground-Based Safety Nets	B0-SNET	2
PIA 4	Improved Flexibility and Efficiency in Descent Profiles (CDO)	B0-CDO	1
	Improved Safety and Efficiency through the initial application of Data Link En-Route	B0-TBO	2
	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	B0-CCO	1

**APPENDIX E-1 : NON-MET SPECIFIC ASBU MODULES WHERE AERONAUTICAL MET SERVICE WILL BE OF RELEVANCE**

<i>Performance improvement area</i>	<i>Module reference</i>	<i>Module scope</i>
Airport operations	B0-ACDM	Improved Airport Operations through Airport-CDM
	B0-APTA	Optimization of Approach Procedures including Vertical Guidance
	B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation
	B1-NOPS	Enhanced Flow Performance through Network Operational Planning
	B1-WAKE	Increased Runway Throughput through Dynamic Wake Turbulence Separation
	B2-WAKE	Advanced Wake Turbulence Separation (Time-based)
Globally interoperable systems and data	B1-DATM	Service Improvement through Integration of all Digital ATM Information
	B1-FICE	Increased Interoperability, Efficiency and Capacity through Flight and Flow Information for a Collaborative Environment Step-1 (FF-ICE/1) application before Departure
	B1-SWIM	Performance Improvement through the Application of System-Wide Information Management (SWIM)
	B2-FICE	Improved Coordination through multi-centre Ground-Ground Integration (FF-ICE/1 and Flight Object, SWIM)
	B2-SWIM	Enabling Airborne Participation in collaborative ATM through SWIM
	B3-FICE	Improved Operational Performance through the introduction of Full FF-ICE
Optimum capacity and flexible flights — through global collaborative ATM	B0-FRTO	Improved Operations through Enhanced En-Route Trajectories
	B1-FRTO	Improved Operations through Optimized ATS Routing
	B3-FRTO	Traffic Complexity Management
	B3-NOPS	Traffic Complexity Management
Efficient flight path — through trajectory-based operations	B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)
	B0-CCO	Improved Flexibility and Efficiency in Departure Profiles — Continuous Climb Operations (CCO)
	B1-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDOs) using VNAV
	B1-TBO	Improved Traffic Synchronization and Initial Trajectory-Based Operation B2-
	B2-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDOs) using VNAV, required speed and time at arrival
	B3-TBO	Full 4D Trajectory-based Operations