



**Cuestión 1 del
Orden del Día:**

Intercambio OPMET

f) Preparación de la parte MET del Vol. III del e-ANP CAR/SAM

(Presentada por la Secretaría)

RESUMEN	
Esta nota de estudio presenta una propuesta de metodología de trabajo para la preparación del Vol. III del e-ANP CAR/SAM para la Región SAM	
Referencias:	
<ul style="list-style-type: none">• Doc 8733, e-ANP CAR/SAM• DOC 9750, Plan Global de Navegación Aérea – GANP – Cuarta y Quinta Edición• Informe del GREPECAs /17, Cochabamba, .. Julio del 2014• Informe del CRPP/4, Lima, ...Julio del 2019	
Objetivos estratégicos de la OACI:	<i>A - Seguridad operacional</i> <i>B - Capacidad y eficiencia de la navegación aérea</i> <i>E - Protección del medio ambiente</i>

1. Introducción

1.1 La Cuarta edición del GANP introdujo el concepto de los Sistemas de Mejora de la Aviación por Bloques (ASBU). La metodología del ASBU es actualizada en la Quinta edición del mismo documento (2016).

1.2 El Consejo de la OACI decidió que los planes regionales de navegación aérea (ANP) deberían publicarse en tres volúmenes, en junio del 2014.

1.3 La implantación del ANP CAR/SAM en su nuevo formato, fue informada al GREPECAS/17, así como a los Directores de Aviación Civil (DACs) en las diferentes reuniones de las Regiones CAR y SAM, así como a través de los grupos de implementación regional (SAM/IG y ANI/WG), los cuales han manifestado apoyar el desarrollo.

2. **Discusión**

2.1 La Reunión recordará que los procesos de aprobación de los Volúmenes I y II del e-ANP CAR/SAM, en su nuevo formato, han culminado en el año 2016 y actualmente son documentos que deben estar bajo constante revisión y actualización, si fuese necesario.

2.2 Así mismo, se recordará que el CRPP/4 había postergado la preparación y aprobación del Vol. III del e-ANP CAR/SAM hasta la aprobación del GANP – Sexta Edición.

2.3 Es importante recordar que el Vol. III del e-ANP CAR/SAM debe contener los elementos dinámicos/flexibles del plan, brindando orientación para la planificación de la implantación de los sistemas de navegación aérea y su modernización, tomando en cuenta los programas emergentes, como el ASBU, y las hojas de ruta de las tecnologías asociadas descritas en el GANP.

2.4 Considerando que el GANP en su quinta edición introdujo los “Basic Building Block”(BBBs) (Elemento constitutivo básico) en conjunción con los ASBU, es importante revisar la implantación de los mismos antes de planificar la implantación de los elementos del ASBU. Los BBBs para el área MET se encuentran en el **Apéndice A** a esta nota de estudio.

2.5 La Reunión debiera recordar que el marco del Basic Building Block (BBB), describe la base de cualquier sistema de navegación aérea robusto. No es nada nuevo, pero sí la identificación de los servicios esenciales que deben proporcionarse para la aviación civil internacional, de conformidad con las normas de la OACI. Estos servicios esenciales se definen en las áreas de aeródromos, gestión del tráfico aéreo, búsqueda y rescate, meteorología y gestión de la información. Además de los servicios esenciales, el marco BBB identifica los usuarios finales de estos servicios, así como los activos (infraestructura de comunicaciones, navegación y vigilancia (CNS)), que son necesarios para proporcionarlos. El BBB se considera un marco independiente y no un bloque del marco ASBU, ya que representa una línea de base en lugar de un paso evolutivo. Esta línea de base está definida por los servicios esenciales reconocidos por los Estados miembros de la OACI, como necesaria para que la aviación civil internacional se desarrolle de manera segura y ordenada. Una vez que se proporcionen estos servicios esenciales, se constituye la base de referencia para cualquier mejora operativa. El marco de BBB se actualizará cada dos años, teniendo en cuenta las enmiendas a las disposiciones de la CAO. Aunque un borrador inicial del marco de BBB se presenta en línea en el Portal de GANP (<https://www4.icao.int/ganportal/BBB>), los BBBs se incluirán en una aplicación basada en la web en un formato similar al ASBU marco de referencia.

2.6 Adicionalmente, considerando los BBBs, y que el GANP en su sexta edición será sometida a consideración de la Asamblea 40 de la OACI (Montreal, 23 de septiembre al 4 de octubre del 2019), es importante empezar a planificar la elaboración del Vol. III del e-ANP en cada una de sus áreas para dar cumplimiento a la Decisión CRPP/ 4-3.

2.7 La Reunión pudiera revisar el Proyecto del GANP – Sexta Edición, disponible en el Portal del GANP y trabajar una plantilla para preparar la misma. La Reunión podría nominar un Grupo de tarea que trabaje en ello y presentar un reporte en la Reunión de Proyectos MET, que tendrá lugar del 17 al 20 de junio del presente año en Lima, Perú. La plantilla propuesta se encuentra como **Apéndice B** a esta nota de estudio.

3. **Acción requerida**

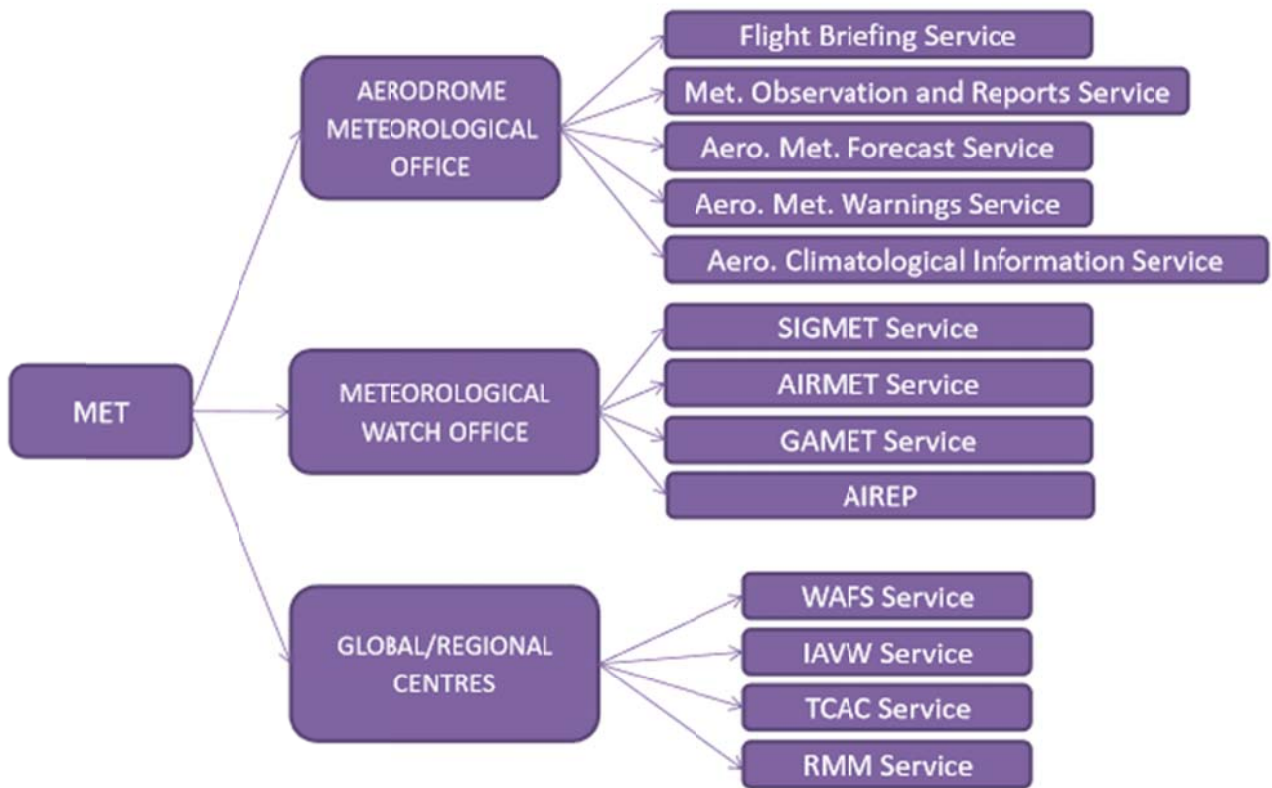
3.1. Se invita a la Reunión a:

- a) tomar nota de la información suministrada en esta nota de estudio;
- b) revisar la información contenida en el Apéndice A ; y
- c) considerar la plantilla del Apéndice B para trabajar el Vol. III del e-ANP, Parte MET para la Región SAM y considerar la designación del Grupo de Trabajo; y
- d) considerar otros temas que consideren necesarios.

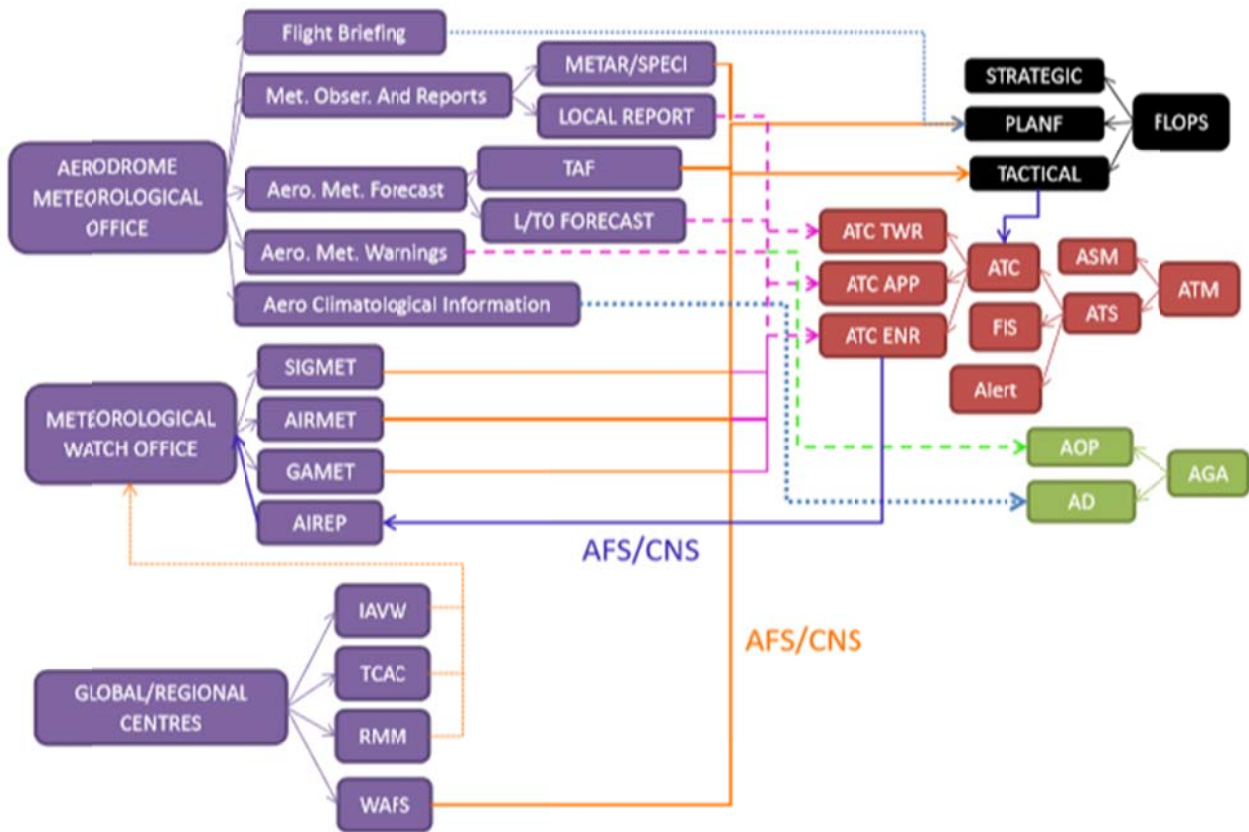
Apéndice A

Marco de Referencia de los Elementos Constitutivos Básicos (BBBs) para los servicios meteorológicos aeronáuticos

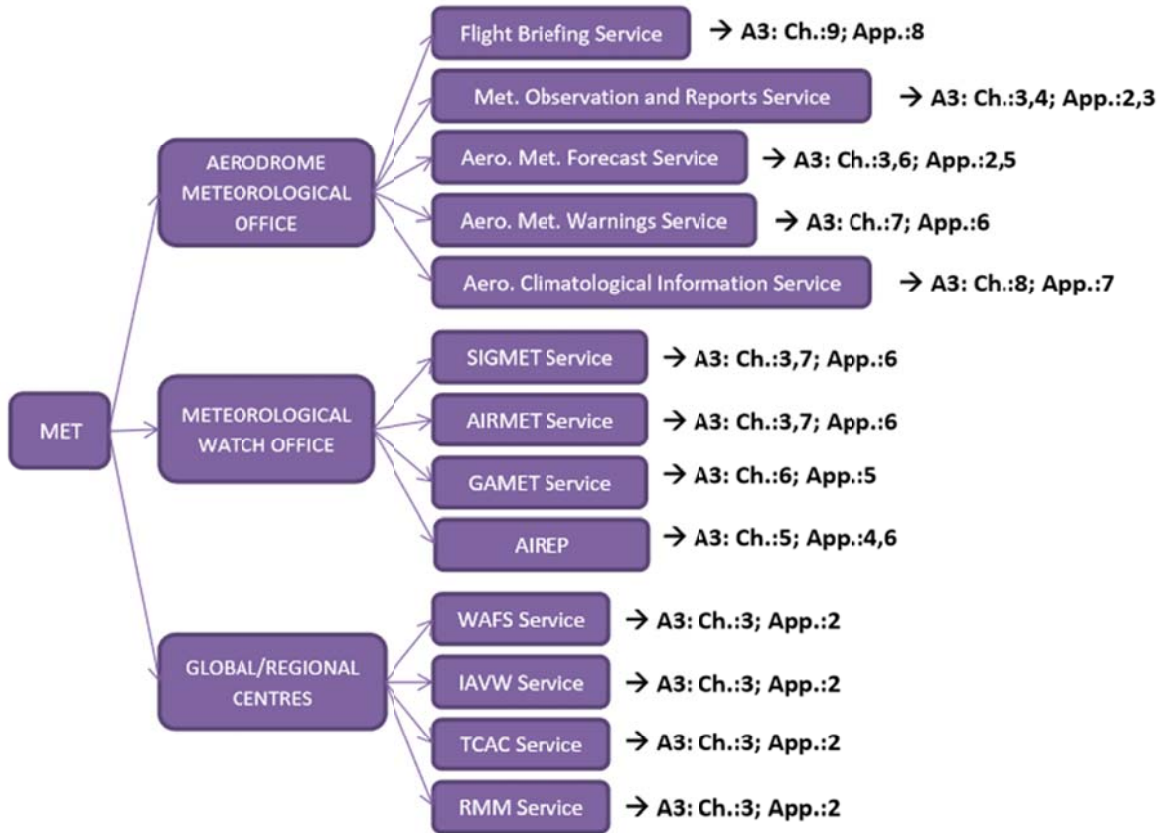
Módulos y elementos básicos de Meteorología Aeronáutica



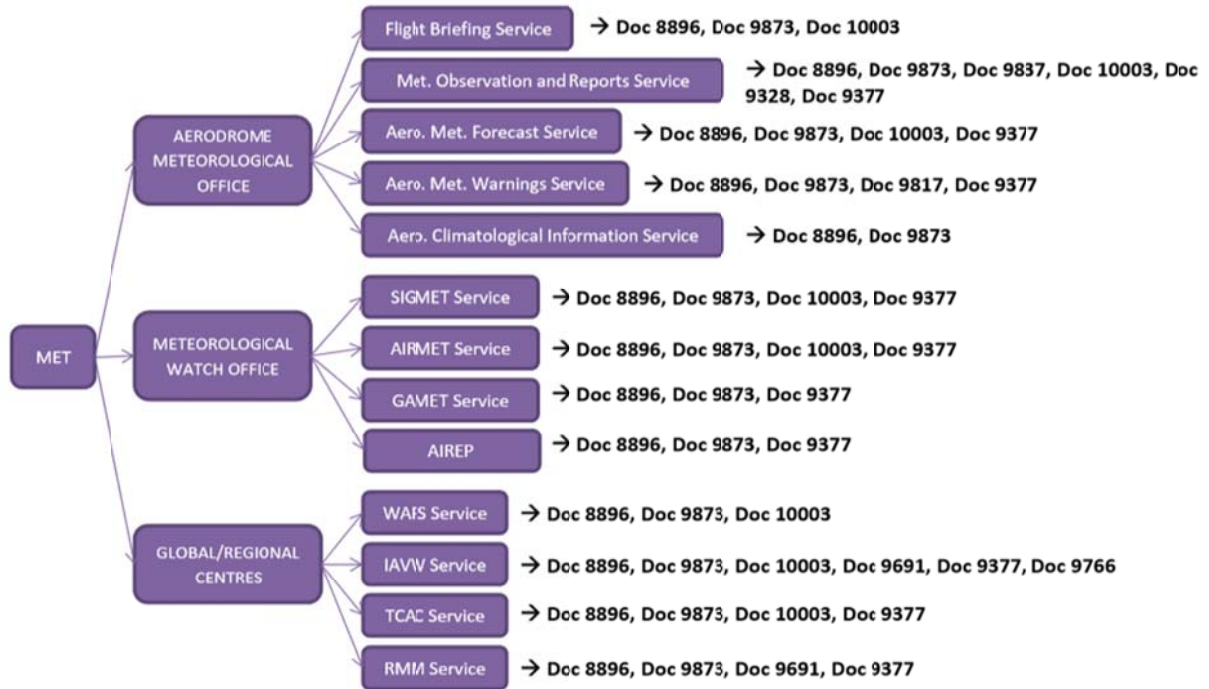
Soporte y usuarios finales de los servicios meteorológicos meteorológicos aeronáuticos



Elementos básicos de los servicios meteorológicos aeronáuticos / Referencia de los SARPs de la OACI



Elementos básicos de los servicios meteorológicos aeronáuticos / Referencia de los documentos Guías



Documentos de Referencias

- Anexo 3: Servicios Meteorológico para la Navegación Aérea internacional.
- Doc 8896: Manual de Métodos Meteorológicos Aeronáuticos.
- Doc 9873: Manual sobre el Sistema de Gestión de la Calidad para la Provisión de los Servicios Meteorológicos Aeronáuticos para la Navegación aérea internacional.
- Doc 9837: Manual sobre sistemas automáticos de observación meteorológica en aeródromos
- Doc 10003: Manual sobre el modelo de intercambio de información meteorológica de la OACI
- Doc 9817: Manual sobre cizalladura del viento a poca altura
- Doc 9691: Manual sobre nubes de cenizas volcánicas, materiales radiactivos y sustancias químicas tóxicas
- Doc 9328: Manual de métodos para la observación y la información del alcance visual en la pista
- Doc 9377: Manual sobre coordinación entre los servicios de tránsito aéreo, los servicios de información aeronáutica y los servicios de meteorología aeronáutica
- Doc 9766: Handbook on the International Airways Volcano Watch (IAVW) —
Operational Procedures and Contact List

APENDICE B

**CAR/SAM AIR NAVIGATION PLAN
VOLUME III**

**SAM AIR NAVIGATION PLAN
VOLUME III**

CAR/SAM AIR NAVIGATION

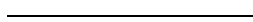
PLAN VOLUME III

SAM AIR NAVIGATION PLAN

VOLUME III

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SAM ANP, VOLUME III
PART 0 – INTRODUCTION

1. INTRODUCTION

1.1 The background to the publication of ANPs in three volumes is explained in the Introduction in Volume I. The procedure for amendment of Volume III is also described in Volume I. Volume III contains dynamic/flexible plan elements related to the implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the Global Air Navigation Plan (GANP).

1.2 The information contained in Volume III is related mainly to:

- Planning: objectives set, priorities and targets planned at regional or sub-regional levels;
- Implementation monitoring and reporting: monitoring of the progress of implementation towards targets planned. This information should be used as the basis for reporting purposes (i.e.: global and regional air navigation reports and performance dashboards); and/or
- Guidance: providing regional guidance material for the implementation of specific system/procedures in a harmonized manner.

1.3 The management of Volume III is the responsibility of the MIDANPIRG.

1.4 Volume III should be used as a tool for monitoring and reporting the status of implementation of the elements planned here above, through the use of tables/databases and/or references to online monitoring tools, as endorsed by MIDANPIRG. The status of implementation is updated on a regular basis as endorsed by MIDANPIRG.

2. AVIATION SYSTEM BLOCK UPGRADES (ASBUs), MODULES AND ROADMAPS

2.1. The ASBU Modules and Roadmaps form a key component to the GANP, noting that they will continue to evolve as more work is done on refining and updating their content and in subsequent development of related provisions, support material and training.

2.2. Although the GANP has a worldwide perspective, it is not intended that all Block Upgrade Modules are required to be applied in every State, sub-region and/or region. Many of the Block Upgrade Modules contained in the GANP are specialized packages that should be applied only where the specific operational requirement exists or corresponding benefits can be realistically projected. Accordingly, the Block Upgrade methodology establishes an important flexibility in the implementation of its various Modules depending on a region, sub-region and/or State's specific operational requirements. Guided by the GANP, ICAO SAM regional, sub-regional and State planning should identify Modules which best provide the needed operational improvements.

SAM ANP, VOLUME III
PART I - GENERAL PLANNING ASPECTS (GEN)

1. PLANNING METHODOLOGY

1.1 Guided by the GANP, the regional planning process starts by identifying the homogeneous ATM areas, major traffic flows and international aerodromes. An analysis of this data leads to the identification of opportunities for performance improvement. Modules from the Aviation System Block Upgrades (ASBUs) are evaluated to identify which of those modules best provide the needed operational improvements. Depending on the complexity of the module, additional planning steps may need to be undertaken including financing and training needs. Finally, regional plans would be developed for the deployment of modules by drawing on supporting technology requirements. This is an iterative planning process which may require repeating several steps until a final plan with specific regional targets is in place. This planning methodology requires full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by all for implementation.

1.2 Block 0 features Modules characterized by technologies and capabilities which have already been developed and implemented in many parts of the world today. It therefore features a near-term availability milestone, or Initial Operating Capability (IOC), of 2013 for high density based on regional, sub-regional and State operational need. Blocks 1 through 3 are characterized by both existing and projected performance area solutions, with availability milestones beginning in 2018, 2023 and 2028 respectively.

2. REVIEW AND EVALUATION OF AIR NAVIGATION PLANNING

2.1. The progress and effectiveness against the priorities set out in the regional air navigation plans should be annually reported, using a consistent reporting format, to ICAO.

2.2. Performance monitoring requires a measurement strategy. Data collection, processing, storage and reporting activities supporting the identified global/regional performance metrics are fundamental to the success of performance-based approaches.

2.3. The air navigation planning and implementation performance framework prescribes reporting, monitoring, analysis and review activities being conducted on a cyclical, annual basis. An Air Navigation Reporting Form (ANRF) reflecting selected key performance areas as defined in the Manual on Global Performance of the Air Navigation System (ICAO Doc 9883) has been developed for each ASBU Module. The ANRF is a customized tool which is recommended for the application of setting planning targets, monitoring implementation, and identifying challenges, measuring implementation/performance and reporting. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in the ANRF template. A sample of the ANRF is provided in **Appendix A**. A sample Template of a planning table which may be used to show the elements planned in an ICAO region is provided in **Appendix B**.

3. REPORTING AND MONITORING RESULTS

3.1 Reporting and monitoring results will be analyzed by the PIRGs, States and ICAO Secretariat to steer the air navigation improvements, take corrective actions and review the allocated objectives, priorities and targets if needed. The results will also be used by ICAO and aviation partner stakeholders to develop the annual Global Air Navigation Report. The report results will provide an opportunity for the international civil aviation community to compare progress across different ICAO regions in the establishment of air navigation infrastructure and performance-based procedures.

3.2 The reports will also provide the ICAO Council with detailed annual results on the basis of which tactical adjustments will be made to the performance framework work programme, as well as triennial policy adjustments to the GANP and the Block Upgrade Modules.

3.3 **Table GEN III-1** contains a minimum set of Implementation Indicator(s) for each of the eighteen ASBU Block 0 Modules necessary for the monitoring of these Modules (if identified as a priority for implementation at regional or sub-regional level). These indicators are intended to enable comparison between ICAO Regions with respect to ASBU Block 0 Modules and will apply only to commonly selected ASBU Modules. All regions/PIRGs reserve the right to select the ASBU Modules relevant to their needs and to endorse additional indicators, as deemed necessary. No reporting is required for ASBU Block 0 Modules that have not been selected.

Note: The priority for implementation as well as the applicability area of each selected ASBU Block 0 Module is to be defined by the GREPECAS.

TABLE GEN III-1 – IMPLEMENTATION INDICATOR(S) FOR EACH ASBU BLOCK 0 MODULE

Explanation of the Table

- 1 Block 0 Module Code
- 2 Block 0 Module Title
- 3 Implementation Indicator
- 4 Remarks

Module Code	Module Title	Implementation Indicator	Remarks
1	2	3	4
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	- % of States having implemented SADIS / WIFS - % of States having implemented QMS	

Appendix A

SAMPLE TEMPLATE

1. AIR NAVIGATION REPORT FORM (ANRF)

(This template demonstrates how ANRF to be used.

The data inserted here refers to ASBU B0-05/CDO as an example only)

Regional and National planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-05/CDO: Improved Flexibility and Efficiency in Descent Profiles					
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y
4. ASBU B0-05/CDO: Planning Targets and Implementation Progress					
5. Elements			6. Targets and implementation progress (Ground and Air)		
1. CDO					
2. PBN STARs					
7. ASBU B0-05/CDO: Implementation Challenges					
Elements	Implementation Area				
	Ground system Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. CDO					
2. PBN STARs					
8. Performance Monitoring and Measurement 8A. ASBU B0-05/CDO: Implementation Monitoring					

Elements	Performance Indicators/Supporting Metrics
1. CDO	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented
2. PBN STARS	Indicator: Percentage of international aerodromes/TMAs with PBN STARS implemented Supporting metric: Number of international aerodromes/TMAs with PBN STARS implemented

8. Performance Monitoring and Measurement 8 B. ASBU B0-05/CDO: Performance Monitoring	
Key Performance Areas (Out of eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF)	Where applicable, indicate qualitative Benefits,
Access & Equity	Not applicable
Capacity	Not applicable
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.
Environment	Reduced emissions as a result of reduced fuel burn
Safety	More consistent flight paths and stabilized approach paths. Reduction in the incidence of controlled flight into terrain (CFIT).
9. Identification of performance metrics: It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified on page 5. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 5. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.	

AIR NAVIGATION REPORT FORM HOW TO USE - EXPLANATORY NOTES

1. **Air Navigation Report Form (ANRF):** This form is nothing but the revised version of Performance Framework Form that was being used by Planning and Implementation Regional Groups (PIRGs)/States until now. The ANRF 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. Also, the PIRGs and States could use this report format for any other air navigation improvement programmes such as Search and Rescue. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in this ANRF template. The results will be analysed by ICAO and aviation partners and utilized in the Regional Performance Dashboards and the Annual Air Navigation Report. The conclusions from the Air Navigation Report will serve as the basis for future policy adjustments, aiding safety practicality, affordability and global harmonization, amongst other concerns.
2. **Regional/National Performance objective:** In the ASBU methodology, the performance objective will be the title of the ASBU module itself. Furthermore, indicate alongside corresponding Performance Improvement area (PIA).
3. **Impact on Main Key Performance Areas:** Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations/benefits to the ATM community. The expectations/benefits are referred to eleven Key Performance Areas (KPA) and 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. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. The KPAs applicable to respective ASBU module are to be identified by marking Y (Yes) or N (No). The impact assessment could be extended to more than five KPAs mentioned above if maturity of the national system allows and the process is available within the State to collect the data.
4. **Planning Targets and Implementation Progress:** This section indicates planning targets and status of progress in the implementation of different elements of the ASBU Module for both air and ground segments.
5. **Elements related to ASBU module:** Under this section list elements that are needed to implement the respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU Module (example: In ASBU B0-80/ACDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-30/DAIM, note that WGS-84 and eTOD are not included) but at the same time if they are closely linked to the module, ANRF should specify those elements. As a part of guidance to PIRGs/States, every Regional ANP will have the complete list of all 18 Modules of ASBU Block 0 along with corresponding elements, equipage required on the ground and in the air as well as metrics specific to both implementation and performance (benefits).
6. **Targets and implementation progress (Ground and Air):** Planned implementation date (month/year) and the current status/responsibility for each element are to be reported in this section. Please provide as much details as possible and should cover both avionics and ground systems. This ANRF being high level document, develop necessary detailed action plan separately for each element/equipage.

7. **Implementation challenges:** Any challenges/problems that are foreseen for the implementation of elements of the Module are to be reported in this section. The purpose of the section is to identify in advance any issues that will delay the implementation and if so, corrective action is to be initiated by the concerned person/entity. The four areas, under which implementation issues, if any, for the ASBU Module to be identified, are as follows:

- Ground System Implementation:
- Avionics Implementation:
- Procedures Availability:
- Operational Approvals:

Should be there no challenges to be resolved for the implementation of ASBU Module, indicate as “NIL”.

8. **Performance Monitoring and Measurement:** Performance monitoring and measurement is done through the collection of data for the supporting metrics. In other words, metrics are quantitative measure of system performance – how well the system is functioning. The metrics fulfil three functions. They form a basis for assessing and monitoring the provision of ATM services, they define what ATM services user value and they can provide common criteria for cost benefit analysis for air navigation systems development. The Metrics are of two types:

A. **Implementation Monitoring:** Under this section, the indicator supported by the data collected for the metric reflects the status of implementation of elements of the Module. For example- Percentage of international aerodromes with CDO implemented. This indicator requires data for the metric “number of international aerodromes with CDO”.

B. **Performance Monitoring:** The metric in this section allows to asses benefits accrued as a result of implementation of the module. The benefits or expectations, also known as Key Performance Areas (KPA), 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. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. Where applicable, mention qualitative benefits under this section.

9. **Identification of performance metrics:** It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)’ implementation benefits, without trying to apportion these benefits between module, have been identified on page 6. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 6. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.

SAM ANP, VOLUME III

PART II – AIR NAVIGATION SYSTEM IMPLEMENTATION

1. INTRODUCTION

1.1 The planning and implementation of the ICAO Aviation System Block Upgrades (ASBUs) should be undertaken within the framework of the MIDANPIRG with the participation and support of all stakeholders, including regulatory personnel.

1.2 The ASBU Blocks and Modules adopted by the MID Region should be followed in accordance with the specific ASBU requirements to ensure global interoperability and harmonization of air traffic management. The MIDANPIRG should determine the ASBU Block Upgrade Modules, which best provide the needed operational improvements in the ICAO MID Region.

2. ICAO CAR/SAM AIR NAVIGATION OBJECTIVES, PRIORITIES AND TARGETS

2.1 In accordance with Recommendation 6/1 of the Twelfth Air Navigation Conference (AN-Conf/12), PIRGs are requested to establish priorities and targets for air navigation, in line with the ASBU methodology.

2.2 The achievement of the intended benefits along each routing or within each area of affinity is entirely dependent on the coordinated implementation of the required elements by all provider and user stakeholders concerned.

2.3 Considering that some of the block upgrade modules contained in the GANP are specialized packages that may be applied where specific operational requirements or corresponding benefits exist, States and PIRGs should clarify how each Block Upgrade module would fit into the national and regional plans.

2.4 As Block 0 modules in many cases provide the foundation for future development, all Block 0 modules should be assessed, as appropriate, for early implementation by States in accordance with their operational needs.

2.5 In establishing and updating the CAR/SAM air navigation plan, the GREPECAS and States should give due consideration to the safety priorities set out in the Global Aviation Safety Plan (GASP) and MID Region safety strategy.

2.6 States in the SAM Region through the GREPECAS should establish their own air navigation objectives, priorities and targets to meet their individual needs and circumstances in line with the global and regional air navigation objectives, priorities and targets.

3. MONITORING OF ASBU MODULES IMPLEMENTATION

3.1 The monitoring of air navigation performance and its enhancement should be carried out through identification of relevant air navigation Metrics and Indicators as well as the adoption and attainment of air navigation system Targets.

3.2 The monitoring of the regional implementation progress and performance metrics/indicators should be done for all elements planned by GREPECAS. The monitoring should allow global correlation of status and expectations, appreciation of benefits achieved for the airspace users, as well as corrective actions to be taken by the PIRG on implementation plans.

3.3 The MIDANPIRG should determine appropriate mechanisms and tools for the monitoring and the collection of necessary data at national and regional levels.

3.4 On the basis of operational requirements and taking into consideration the associated benefits, SAM Region has prioritized the implementation of the Block “0” Modules, also agreed on the subsidiary bodies that will be monitoring and supporting the implementation of the modules as in Table below:

SAM REGION ASBU BLOCK 0 MODULES PRIORITIZATION AND MONITORING

Module Code	Module Title	Priority	Start Date	Monitoring		Remarks
				Main	Supporting	
Performance Improvements Area (PIA) : Airport Operations						
B0-APTA	Optimization of Approach Procedures including vertical guidance					
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation					
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)					
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)					
B0-ACDM	Improved Airport Operations through Airport-CDM					
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					

B0-FRTO						
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					
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)					

Note:

Priority : Modules that have the highest contribution to the improvement of air navigation safety and/or efficiency in the SAM Region. These modules should be implemented where applicable and will be used for the purpose of regional air navigation monitoring and reporting for the period 2015-2018.

Priority : Modules recommended for implementation based on identified operational needs and benefits.

APPENDIX

ASBU BLOCK 0 MODULES APPLICABLE IN THE SAM REGION

BO-AMET**Description and purpose**

Global, regional and local meteorological information:

- a) forecasts provided by world area forecast centres (WAFC), volcanic ash advisory centres (VAAC) 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; and
- c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

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.

Main performance impact:

KPA-01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	Y

Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.

Elements	Applicability	Performance Indicators/Supporting Metrics	Targets	Timelines
SADIS FTP	All States	Indicator: % of States having implemented SADIS FTP service Supporting Metric: Number of States having implemented SADIS FTP service	100%	Dec. 2018
QMS	All States	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	80%	Dec. 2018
SIGMET	All States with MWOs in SAM Region	Indicator: % of States having implemented SIGMET Supporting metric: number of States having implemented SIGMET	100%	Dec. 2018
OPMET	All States	Indicator: % of States having implemented METAR and TAF Supporting metric: number of States having implemented METAR and TAF	95%	Dec. 2018
WIND SHEAR	TBD	Indicator: TBD Supporting metric: TBD	TBD	TBD

Table B0-AMET 3-2

Volcanic Ash Advisory Centers

Table B0-AMET 3-3

Tropical Cyclone Advisory Centers

Table B0-AMET 3-7
WIND SHEAR Availability

TBD

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