



Regional Air Navigation Priorities

NAM/CAR Regional Performance-based Air
Navigation Implementation Plan (RPBANIP)
Volume III of the CAR/SAM eANP

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Regional and National Air Navigation Performance Framework/Aviation System
Block Upgrade (ASBU) Implementation Workshop for the NAM/CAR Regions
(Mexico City, Mexico, 22 – 26 August 2016)





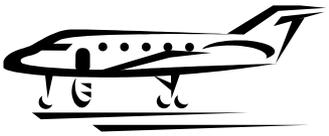
Outline

- NAM/CAR Regional Performance-based Air Navigation Implementation Plan (RPBANIP)
- Regional Performance Objectives- Our Air Navigation priorities
- ASBU adopted modules
- CAR/SAM eANP Vol III- Regional follow-up/ Operational improvements
- Follow-up to mandatory requirements and operational improvements

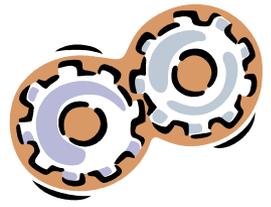


NAM/CAR Regional Performance-based Air Navigation Implementation Plan (RPBANIP)?





The concepts to implement the safety and capacity/efficiency strategic objectives
(Global ATM Operational Concept)



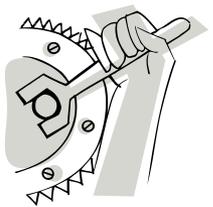
Global Air Navigation Plan

Global Aviation Safety Plan



Global Performance ASBU approach

Global Safety Initiatives (GSI)



Global and regional work plans (eANP) and action plans (States)

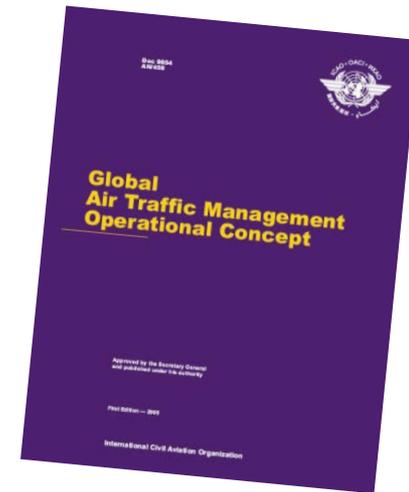
RPBANIP



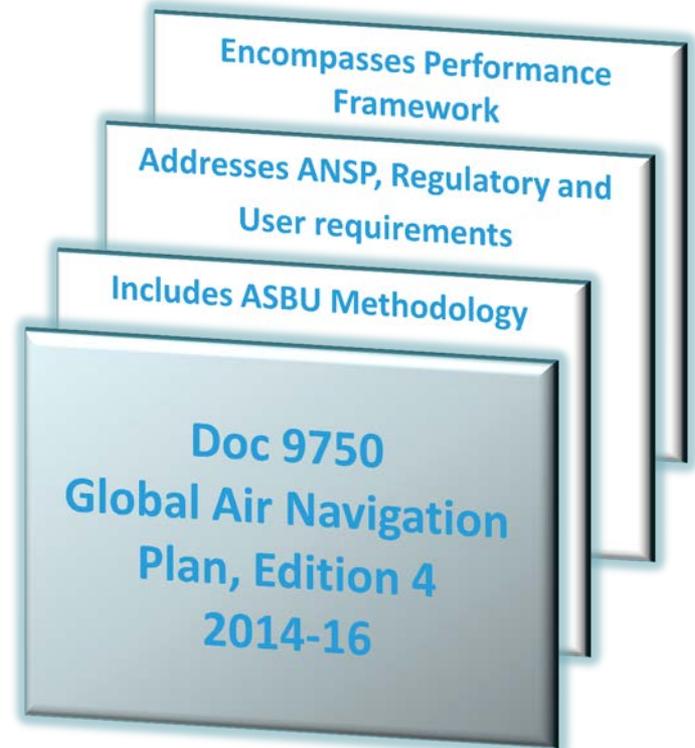
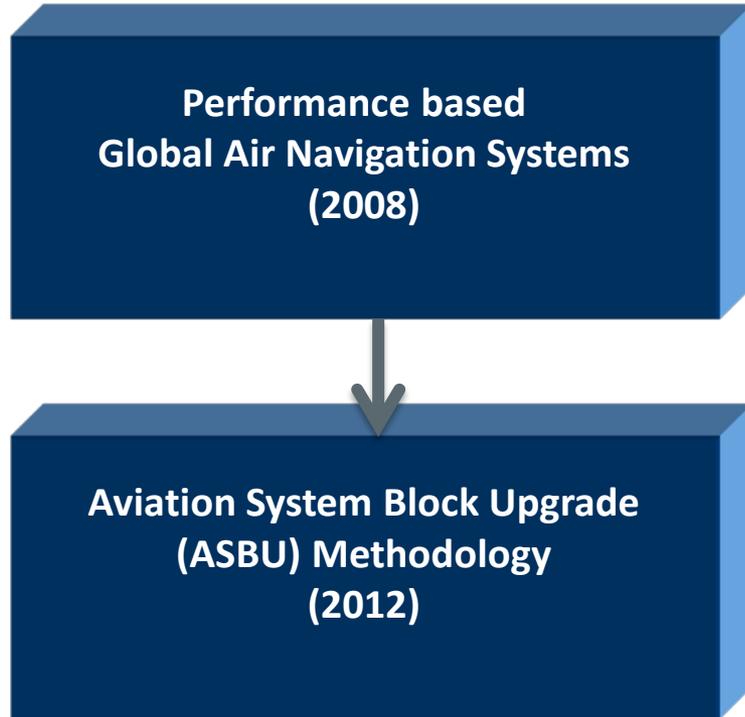
Global ATM Operational Concept Air Navigation Implementation Overview

Global ATM Operational Concept

- The Global Air Traffic Management System Operational Concept;
 - describes how an integrated global air navigation system should operate
 - describes what is envisaged on the basis of services
 - describes how the services form an integrated system
 - utilizes an information rich environment, that solves most problems strategically, through a collaborative process
 - provides States and industry with clearer objectives for the design and implementation of ATM and supporting CNS systems
- ATM user expectations are drivers for change, requiring:
 - Safety case
 - Business case



Technical Enablers
Operational Enablers procedures
Socio-economic Enablers





NAM/CAR Regional Performance-based Air Navigation Implementation Plan (RPBANIP)?

- Performance-based Plan and ASBU oriented plan
- Official Plan that contains all Air Navigation Areas of implementation: AIM, AGA, ATM, CNS, MET, SAR
- Encompasses our mandatory and optional Air Navigation requirements
- High Level Regional (NAM/CAR) Action Plan for implementing Air Navigation matters
- Live document – to be reviewed and updated every 3 years



NAM/CAR Regional Performance-based Air Navigation Implementation Plan (RPBANIP)?

- Approved by the North America, Central America and Caribbean Directors of Civil Aviation (NACC/DCAs)
- Guidance and reference for implementation: NACC/WG, ANI/WG, ANSPs and other regional implementation groups and States (National Plans)
- First edition in 2008: Performance Approach
- Second edition in 2011: RPO updates
- Third edition in 2014: ASBU methodology compliant
- Main source for new Volume III CAR/SAM eANP



NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP)

v3.1 — April 2014
International Civil Aviation Organization

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Regional Performance Objectives (RPO) Our Air Navigation priorities



**NAM/CAR Regional
Performance-Based Air
Navigation
Implementation Plan
(RPBANIP)**

RPBANIP © v3.1 — 2014



the NAM/CAR regional priorities /
Regional Performance Objectives
(RPO)

2013 to 2018.

Collaborative Decision-
Making (CDM)
processes



RPO should address requirements
on the basis of assessments and
studies



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Regional Performance Objectives-
Our Air Navigation priorities

Regional Performance Objectives (RPO) Our Air Navigation priorities

high-level tasks, establishing the expected operational benefits and the metrics for progress measurements, benefits and achievements

Further detailed actions plans for the RPOs shall be developed by the regional implementation groups as needed

group of common benefits for all stakeholders that can be achieved through the implementation strategies.





| 1. IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN) | | | | |
|---|--|------------|--------------------------------|--------|
| Benefits | | | | |
| Environment | <ul style="list-style-type: none"> • Reductions in fuel consumption | | | |
| Efficiency | <ul style="list-style-type: none"> • Ability of aircraft to conduct flight more closely to preferred trajectories • Increase in airspace capacity • Facilitate the utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing) | | | |
| Strategy | | | | |
| ATM Component | TASK DESCRIPTION | START-END | RESPONSIBLE | STATUS |
| AOM | a) Implement Collaborative Decision-Making (CDM) process in coordination with stakeholders | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | b) Implement PBN airspace concept for oceanic, continental and terminal areas in accordance with the ICAO PBN Manual | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | c) Update Letters of Agreement between ATC units | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | d) Publish regulations and procedures for PBN operational approval | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | e) Evaluate and implement PBN requirements for ATC automated systems, as required | 2013- 2016 | States, Territories, Int. Org | Valid |
| | f) Analyze and enhance air communication, navigation (ground nav aids GNSS) and surveillance infrastructure in accordance with PBN requirements | 2013- 2018 | States, Territories, Int. Orgs | Valid |
| | g) Develop and implement PBN training programme for pilots, ATCOs, operators and regulators, as well as implementation of GNSS technologies | 2013- 2018 | States, Territories, Int. Orgs | Valid |
| | h) Optimize the ATS route structure through implementation of RNAV routes between major city pairs with navigation specification RNAV-5 /2 for en-route operations | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | i) Implement CDOs/CCOs for SID _s /STAR _s in terminal areas based on RNAV 1-2 and RNP 1-2 navigation specification, as required | 2013- 2016 | States, Territories, Int. Org | Valid |
| | j) Design and implement PBN APV in accordance with Assembly Resolution A37-11 | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | k) Conduct PBN safety assessment based ATC simulations (fast time and/or real time), live trials, etc., as required | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | l) Develop performance measurement programme | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | m) Develop post-implementation PBN Safety Assessment Programme | 2013- 2016 | States, Territories, Int. Orgs | Valid |
| | n) Monitor implementation progress | 2013- 2018 | States, Territories, Int. Orgs | Valid |
| GPIs | GPI/5: Performance-Based Navigation; GPI/7: Dynamic And Flexible ATS Route Management; GPI/8: Collaborative Airspace Design And Management; GPI/10: Terminal Area Design and Management; GPI/11: RNP and RNAV SIDs and STARs; and GPI/12: FMS-Based Arrival Procedures | | | |

Regional Performance Objectives (RPO) Our Air Navigation priorities

1. IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN)

2. IMPLEMENTATION OF FLEXIBLE USE AIRSPACE (FUA)

3. IMPROVE DEMAND AND CAPACITY BALANCING (DCB)

4. IMPROVE SITUATIONAL AWARENESS

5. ENHANCE CAPACITY AND EFFICIENCY OF AERODROME OPERATIONS IN THE CAR REGION



Regional Performance Objectives (RPO) Our Air Navigation priorities

6. OPTIMIZATION AND MODERNIZATION OF COMMUNICATION INFRASTRUCTURE

7. IMPLEMENTATION OF AERONAUTICAL INFORMATION MANAGEMENT (AIM)

8. IMPROVE AVAILABILITY OF METEOROLOGICAL INFORMATION

9. IMPROVE SEARCH AND RESCUE (SAR) SERVICES

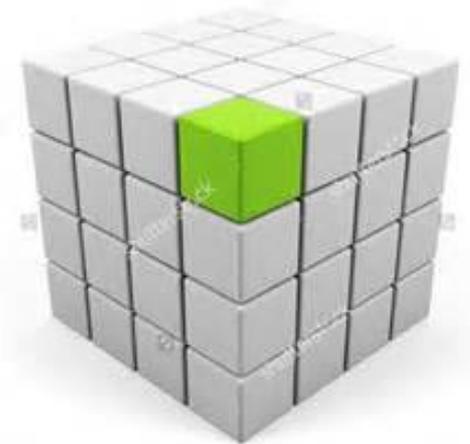
| 9. IMPROVE SEARCH AND RESCUE (SAR) SERVICES | | | | |
|---|---|-----------|--------------------------------------|--------|
| Benefits | | | | |
| Efficiency | <ul style="list-style-type: none"> Enhanced traffic surveillance Enhanced collaboration among stakeholders | | | |
| Safety | <ul style="list-style-type: none"> Improved operational efficiency Improved safety management | | | |
| Strategy | | | | |
| ATM Component | TASK DESCRIPTION | START-END | RESPONSIBLE | STATUS |
| SDM | a) Conduct comprehensive analysis of State SAR requirements based on risk assessment and quality assurance principles | 2013-2016 | States, Territories, Int. Orgs, ICAO | Valid |
| | b) Foster the harmonization of policies, regulations, practices, and procedures of the aeronautical/maritime SAR services in accordance with ICAO and IMO provisions | 2013-2016 | States, Territories, Int. Orgs, ICAO | Valid |
| | c) Develop and update SAR agreements between Rescue Coordination Centres (RCCs) of adjacent States and SAR service international agencies, as required | 2013-2016 | States, Territories, Int. Orgs | Valid |
| | d) Foster the establishment of joint aeronautical/maritime SAR Committees, including the integration of voluntary SAR organizations as well as the development of agreements between all stakeholders of the national SAR service | 2013-2016 | States, Territories, Int. Orgs, ICAO | Valid |
| | e) Develop human resource and training planning strategy in line with ICAO SAR provisions | 2013-2016 | States, Territories, Int. Orgs, ICAO | Valid |
| | f) Monitor implementation progress | 2013-2016 | ICAO, States/Territories | Valid |
| GPIs | GPI/6: Air Traffic Flow Management; GPI/9: Situational Awareness | | | |



the NAM/CAR Regions adopted, in principle, the 18 Block 0 (B0) modules

15 of the modules are detailed in RPBANIP

RPOs contain the basic elements to be implemented for the different ASBU B0 Modules



ASEP, OFPL and WAKE - shall be included in future reviews of the RPBANIP, if required



SAMPLE of TARGETS : RPBANIP

| ASBU B0 Module | Element | Targets |
|---|--|---|
| B0-10/FRTO: Improved Operations through Enhanced En-Route Trajectories | 1. Airspace Planning | 100% of States to have completed a PBN plan by Dec. 2018 |
| | 2. Flexible Use Airspace | 50% of selected segregated airspaces available for civil operations by Dec. 2016 |
| B0-15/RSEQ: Improve Traffic Flow Through Runway Sequencing (AMAN/DMAN) | 3. AMAN And Time-Based Metering | 10% of selected aerodromes with AMAN and time based metering by Dec. 2016 |
| | 4. Departure Management (DMAN) | 10% of selected aerodromes with DMAN by Dec. 2016 |
| | 5. Movement Area Capacity Optimization | 20% of selected aerodromes with Airport-capacity calculated by Dec. 2016 |
| B0-40/TBO: Improved Safety and Efficiency through the initial application of En-Route Data Link | 6. ADS-C Over Oceanic and Remote Areas | 80% of selected FIRs with ADS-C implemented by December 2016 |
| | 7. CPDLC | 80% of selected FIRs with CPDLC implemented by June 2018 |
| B0-65/APTA: Optimization of Approach Procedures Including Vertical Guidance | 8. APV with Baro VNAV | 80% of instrument runways to have APV with Baro VNAV implemented by December 2016 – Service Providers and users |
| | 9. APV with SBAS (WAAS) | 20% of instrument runways to have APV with SBAS/WAAS implemented by December 2018– Service Providers and users |
| | 10. APV with GBAS | 20% of instrument runways to have APV with GBAS by December 2018 – Initial implementation at some States (services providers) |
| | 11. LNAV | 60% of instrument runways to have LNAV procedure implemented by December 2016 – Service Providers and users as per Assembly Resolution A37-11 |
| B0-75/SURF Safety and Efficiency of | 12. Surveillance System for Ground Surface Movement (PSR, SSR, ADS B or Multilateration) | 30% of selected aerodromes with SMR/ SSR Mode S/ ADS-B/ Multilateration for ground surface movement by June 2018 |



Recommendation 6/1 – Regional performance framework – planning methodologies and tools

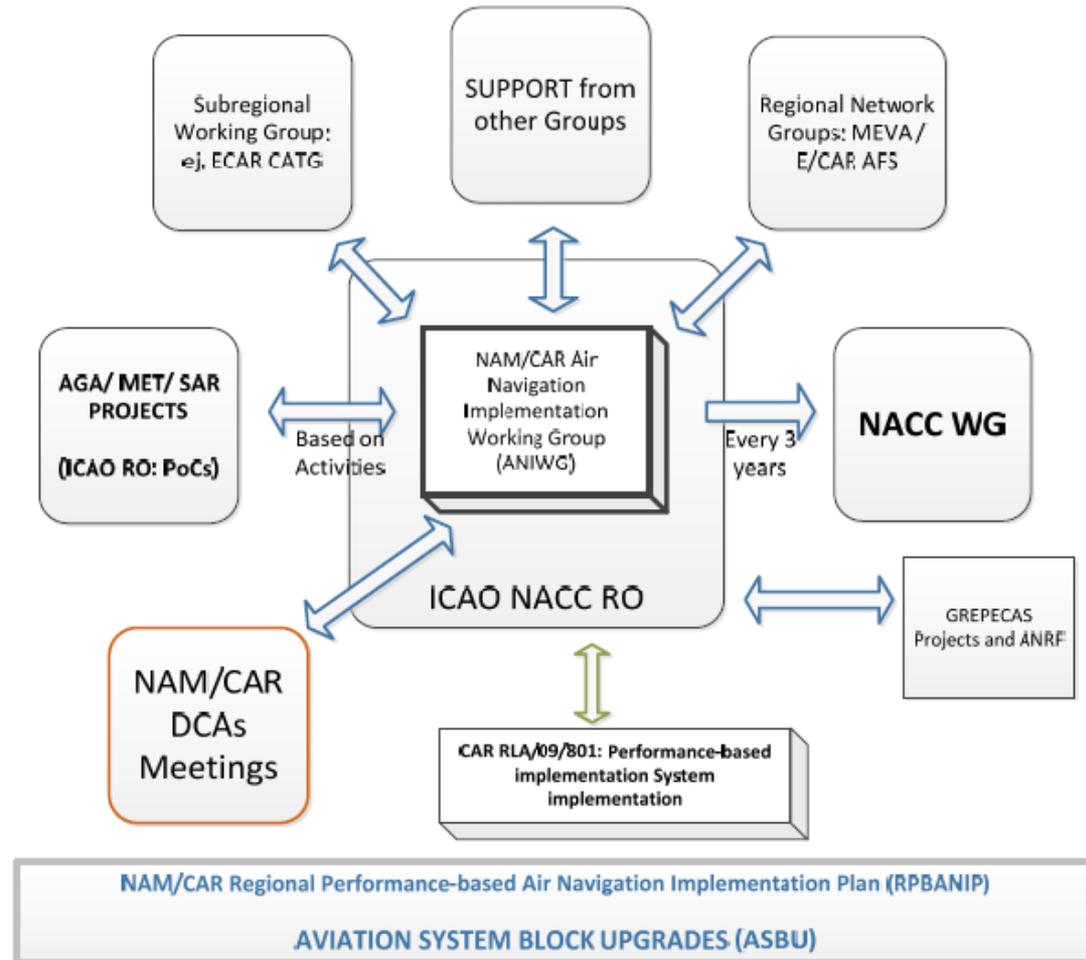
That States and PIRGs:

- a) finalize the alignment of regional air navigation plans with the Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP) by May 2014;
- b) focus on implementing aviation system block upgrade Block 0 Modules according to their operational needs, recognizing that these modules are ready for deployment;
- c) use the eANPs as the primary tool to assist in the implementation of the agreed regional planning framework for air navigation services and facilities;
- d) involve **regulatory and industry personnel** during all stages of planning and implementation of aviation system block upgrade modules;
- e) develop action plans to address the identified impediments to air traffic management modernization as part of aviation system block upgrade planning and implementation activities;



NAM/CAR SUPPORT AND IMPLEMENTATION WORKING GROUP

<http://www.icao.int/NACC/Pages/nacc-regionalgroups-aniwg.aspx>





ICAO > North American, Central American and Caribbean Regional Office (NACC) Office > Regional Groups

Regional Groups

| Links to Regional Groups | |
|--|---|
| CAR/SAM Regional Planning and Implementation Group (GREPECAS) | |
| Regional Aviation Safety Group – Pan America (RASG-PA) | |
| Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) | |
| NAM/CAR Air Navigation Implementation Working Group (ANI/WG) | ← |
| Haiti Civil Aviation Steering Committee (Haiti CASC) | |
| Eastern Caribbean Civil Aviation Technical Group (E/CAR/CATG) | ← |
| Eastern Caribbean Network Technical Group (E/CAR/NTG) | ← |
| MEVA III Operational Site (MEVA III) | ← |
| NAM/CAR Civil Aviation Training Centres Working Group (NAM/CAR/CATC/WG) | ← |

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NAM/CAR Regional Performance-Based Air Navigation Implementation Plan - RPBANIP

<http://www.icao.int/NACC/Pages/regional-groups.aspx>

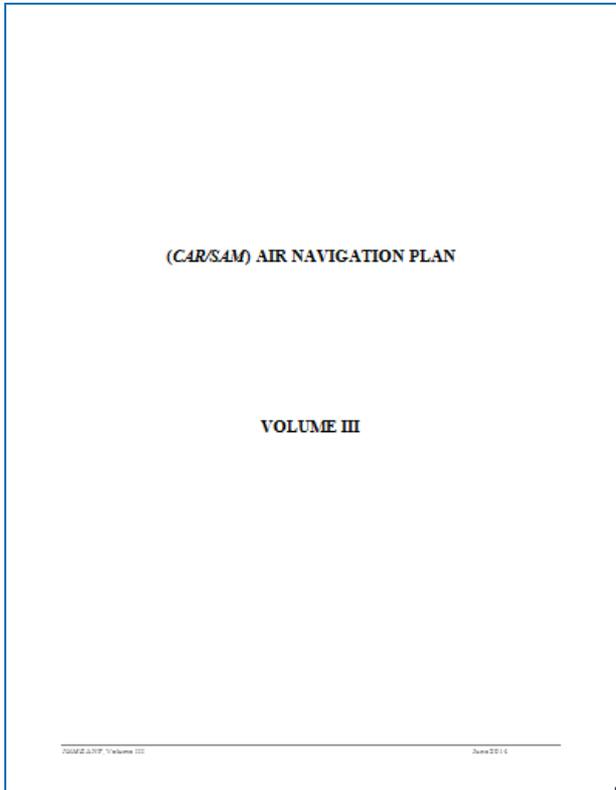


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PART I — General Planning Aspects (GEN)

 Table GEN III-1 – Implementation Indicator(s) for each ASBU Block 0 Module

 Appendix A – Sample Template for Air Navigation Report Form (ANRF)

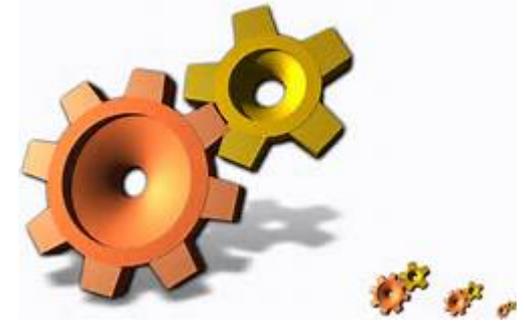
 Appendix B – Main Planning Table Template

PART II — Air Navigation System Implementation.....

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.

Guidance: providing regional guidance material for the implementation of specific system/procedures in a harmonized manner.



The management of Volume III is the responsibility of the GREPECAS.

Follow-up to operational improvements

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

Explanation of the Table

- 1 Block 0 Module Code
- 2 Block 0 Module Title
- 3 High level Implementation Indicator/ Module elements
- 4 Remarks (include any specific selection or applicable ATS units, aerodromes, etc.)

| Module Code | Module Title | Implementation Indicator | Remarks |
|-------------|---|--|---------|
| 1 | 2 | 3 | 4 |
| B0-APTA | Optimization of Approach Procedures including vertical guidance | % of international aerodromes having at least one runway end provided with APV Baro-VNAV or LPV procedures | |

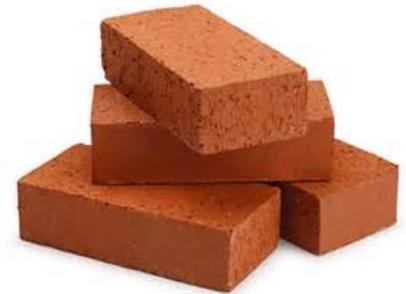


Appendix B - Main Planning Table Template

| Block | Objectives | | | | Priorities and targets | | | Reference Supporting Planning Document (ANRF, other) |
|-------|------------------------------------|------------------------------|--|----------------------------|------------------------|--------------------------------|-----------------------|--|
| | ASBU modules and elements Enablers | Performance Improvement Area | Applicable or not in [Region] (Yes/No) | Regional planning elements | Enablers | Priority allocated in [Region] | Target(s) in [Region] | |
| | | | | | | | | |

Follow-up to mandatory requirements

Volume II represents the CAR/SAM Region requirements to fulfil the air navigation agreements reached in respect of the facilities and services necessary to support international civil aviation operations in the Region.



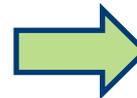
General and Specific Regional Requirements

TABLE SAR I-1 – SEARCH AND RESCUE REGIONS (SRR) OF THE CAR/SAM REGIONS

TABLE/TABLA CNS II-2...

TABLE MET II-1 - METEOROLOGICAL WATCH OFFICES

| State | FIR or CTA Where Meteorological Service is Required | | Responsible Meteorological Watch Office | | Meteorological Service To Be Provided | | | |
|-----------|---|-------------------------|---|-------------------------|---------------------------------------|-------------|-------------|-------------|
| | Name | ICAO Location Indicator | Name | ICAO Location Indicator | SIGMET (WS) | SIGMET (WV) | SIGMET (WC) | SIGMET (WA) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Argentina | Ezeiza | SAEF | BUENOS AIRES/ Aeroparque, Jorge Newbery | SABE | Y | Y | | N |
| | Comodoro Rivadavia | SAVF | COMODORO RIVADAVIA/General Mosconi | SAVC | Y | Y | | N |
| | Córdoba | SACF | CORDOBA/Ing. Aer. A.L. Taravela | SACO | Y | Y | | N |



Volume III, Part II provides the implementation status of the requirements detailed in Volume II.



CAR/SAM eANP Vol III- Current Status

GREPECAS Decision PPRC/4-3

POSTPOSTMENT OF APPROVAL OF CAR/SAM eANP VOLUME III

Considering the upcoming GANP update by ICAO and the importance of aligning the Volume III to these requirements:

- a) The Secretariat the circulation of Vol III until the Sixth Version of the GANP is available;
- b) States to continue using their Regional Performance-based Air Navigation Plans (SAM-PBIP y RPBANIP) for the development of their National Air Navigation Plans



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