*International Civil Aviation Organization*
North American, Central American and Caribbean Office
**Third Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/3)**
Punta Cana, Dominican Republic, 8-12 September 2008

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**Agenda Item 2:**  **Air Navigation Services**
           **2.1    Air Navigation Matters**

**CAR/NAM REGIONAL IMPLEMENTATION PLAN**

(Presented by the Secretariat)

| SUMMARY |
|---|
| This working paper presents the NAM/CAR Regional Implementation Plan, agreed by the NACC/WG/2 Meeting.  The plan considers ATM performance objectives approved by GREPECAS to ensure harmonized implementation of air navigation services in line with the needs and requirements of the NAM and CAR Regions. |
| **Strategic Objective: D - Efficiency** |

**1.        Introduction**

1.1        The Fifth Meeting of the All Planning and Implementation Regional Groups (ALLPIRG)/Advisory Group (ALLPIRG/5) held in Montreal, Canada, from 23 to 24 March 2006, agreed to adopt a performance based approach in its work and to undertake steps to ensure harmonization of regional and national work aligned under the ATM Global Operational Concept, in support of ICAO planning and implementation processes and the guidelines of the ICAO Council.

1.2         GREPECAS, through its Conclusion 14/51, agreed to reorganize the ATM work programme; this review is expected to conclude by the end 2009.  As a follow-up to these guidelines, the Sixth Meeting of the GREPECAS ATM/CNS Subgroup agreed to harmonize the ATM and CNS work programme in line with the Global Air Navigation Plan (Doc 9750) and ICAO vision as established in the Global Air Traffic Management Operational Concept (Doc 9854).

**2.        Analysis**

2.1        The NACC/WG/2 Meeting, through its Draft Conclusion 2/5, considered the need for harmonizing the work programmes into a single NAM/CAR Regional Implementation Plan for Air Navigation Services (ANS).  The initiative comes from the need to ensure close coordination between all ANS fields, such as ATM, CNS, AGA, AIM and MET, toward a seamless ATM system in line with the operational initiatives of the Global Air Navigation Plan.  Some broader planning perspectives and work improvements over large geographical areas are the NextGen programme of the United States and the European SESAR programme.

2.2        The Meeting also recognized that the work of all air navigation fields was being merged and that work had to be addressed in a holistic and strategic way.  The Meeting therefore agreed to develop terms of reference with no division between CNS and ATM work, and noted that accomplishing the work associated with performance objectives would require both CNS and ATM efforts.

2.3        Similarly, it was recalled that the current use of the term "ATM" refers to all elements of the air navigation system, given due consideration to facilitate and harmonize the implementation process. It was agreed that considering the ATM Operational Concept, ATM implementation had to be faced as a system requiring the support of all the fields that traditionally are considered in the air navigation system.

2.4        The Meeting recognized that it is critical to align all work programmes within this regional implementation plan, and agreed that the terms of reference should consider the ATM performance objectives already approved by GREPECAS, detailed tasks with deadlines, and periodic monitoring activity that will be carried out by ICAO.

2.5        The Meeting agreed that restructured and coordinated work between all ANS fields will ensure efficient implementation in the short and medium terms in order to achieve harmonized enhancements within the ATM Operational Concept approach.  The Meeting unanimously agreed to the performance based approach, including specific terms of reference for this new NACC Working Group, as detailed in the Appendix to WP/03.

2.6        The Meeting concurred that the main tasks should be carried out under the project development concept, establishing other projects, if applicable, in order to obtain short term regional enhancements that may be required by the ATM community.

2.7        While complying with a reorganization of work programmes and future meetings, the plan also seeks to improve collaborative decision-making (CDM) processes and to ensure that resources be addressed in a suitable manner to support the ICAO Strategic Plan.  Moreover, it seeks to comply with the following principles:

> ➢        identify implementation tasks with regard to the Global Plan Initiatives (GPIs) of Doc 9750, in order to facilitate the objectives and results targeted by each performance objective;
> ➢        associate, in a logical manner, the tasks with the seven components of Doc 9854, (AOM, DCB, AO, TS, CM, AUO ATMSDM) as appropriate;
> ➢        avoid unnecessary task duplications;
> ➢        quantify cost/benefit analysis in terms of performance measures, deadlines, responsible body for implementation and results;
> ➢        offer specific solutions to ensure that expectations of the ATM community and system requirements are fulfilled;
> ➢        facilitate a dynamic and periodical review, based on the States/Territories implementation needs and requirements; and
> ➢        foster the use of electronic tools and teleconferences (TELECON) to ensure full information exchange.

**3**          **Conclusion**

3.1          The evolution of modern air navigation systems needs to render regional implementation works more efficiently.  In order to comply with established goals, the Meeting should consider the integration of the regional work programme with tasks and action plans agreed by the NACC/WG in a single format as the NAM/CAR Air Navigation System Implementation Plan, included in the **Appendix** to this working paper.

3.2          A common harmonized regional planning approach will allow all working groups of North America, Central America and the Caribbean (NACC) to continue their own implementation tasks in line with the particular needs of the involved FIRs.  The establishment of implementation projects in line with ICAO guidelines will allow the dynamic identification of needs and periodic follow-up of attained implementation results and the optimum assignment of resources by States/Territories.

**4.**          **Suggested Action**

4.1          The Meeting is invited to:

a)          agree on the NAM/CAR Air Navigation System Implementation Plan (ANSIP) included in the Appendix to this working paper;

b)          assign the follow-up tasks from the ANSIP to the NAM/CAR Working Groups in accordance with the information presented in this paper; and

c)          agree to other actions as deemed appropriate.


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**APPENDIX**

# INTERNATIONAL CIVIL AVIATION ORGANIZATION

## NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN

## REGIONAL OFFICE

# AIR NAVIGATION IMPLEMENTATION PLAN

# FOR THE CAR/NAM REGIONS

1.        **Background**

1.1        The Global Plan describes a strategy aimed at achieving near and medium term ATM benefits on the basis of available and foreseen aircraft capabilities and ATM infrastructure. It contains guidance on ATM improvements necessary to support a uniform transition to the ATM system envisioned in the global ATM operational concept (Doc 9854). The operational concept presents the ICAO vision of an integrated, harmonized and globally interoperable ATM system.

1.2        The Strategic Vision is *"To foster implementation of a seamless, global air traffic management system that will enable aircraft operators to meet their planned times of departure and arrival and adhere to their preferred flight profiles with minimum constraints and without compromising agreed levels of safety."*

1.3        This vision is refined in the Mission of Implementation as follows:

        *To develop a seamless, globally coordinated system of air navigation services that will cope with worldwide growth in air traffic demand while:*

- *improving upon the present levels of safety;*
- *improving upon the present levels of regularity;*
- *improving upon the overall efficiency and capacity of airspace and airports;*
- *improving operations allowing for capacity increase while minimizing fuel consumption and aircraft engine emissions;*
- *increasing the availability of user-preferred flight schedules and profiles; and*
- *minimizing differing equipment carriage requirements between regions.*

1.4        Having a very strategic geographical location at the confluence of ATS routes connecting the major destinations, the airspace has become a vital link to the smooth flow of traffic between major airspace in NAM and CAR Regions.

1.5        The complexities of Caribbean airspace are unique in nature. Based on the topography, various types of aircraft from Helicopter to bigger type of jet aircraft are being operated in various sectors. Restricted airspace for Military flying and the mixed type of aircraft with unmatching capabilities occupy the airspace and their conflicting demands need to be accommodated.

1.6        Civil commercial, Military, general Aviation, Space research, hobby and adventure flying, flying training, helicopter flying have been constantly increasing and thereby the airspace has been getting congested day by day. Technological innovations provide more simple and flexible solutions not only for transportation needs but also for national security and economic development.

1.7        Entry of Low Cost carriers with attractive flying schemes has boosted the traffic in the recent past and the air transport industry is in the upswing with more and more air operations. These carriers have not only become a potential competitors to the currently established airlines but also a potential challengers to the ATM system as the airspace/ airports are getting more and more congested and leading to delay and holding resulting in burning of extra fuel.

1.8        Military flying activities with frequent airspace and airport closures implies additional civil flight operations and workload on the capacity and air traffic management point of view.

1.9         Recently the rate of traffic growth at an average of 3.3% with the advent of new routes and airlines commencing operations as Caribbean destinations have become more popular for international tourist and commercial interest. The total of operations of the main airports of the CAR Region in the period 2002 to 2005 reflected a positive trend of 1.92%, the global trend is 6%. The main rates of traffic growing are:

| | |
|---|---|
| Cuba | 6.41% |
| Dominican Republic | 5.74% |
| Belize | 4.77% |
| El Salvador | 3.06% |
| México | 2.57% |
| U. S. (P. R) (V. I) | 2.51% |
| Guatemala | 2.51% |
| Costa Rica | 2.42% |

1.10        More challenges are in the horizon for ATM seamless system in CAR and NAM Regions. It is expected more and more air operations among CAR and NAM Regions which will require gradual operational developments of ATM system to ensure an optimum air traffic flow towards among certain areas or through them, during periods in which the demand exceeds or is foreseen to exceed the available capacity.

1.11        New aircraft are capable of extremely accurate navigation during all phases of flight and many are equipped with satellite based communication. Aircraft operations growth also has resulted in a relatively young airline fleet, most equipped with some or all of enhanced capabilities.

1.12         Implementation programmes are required to be addressed with a performance-based approach, in order to achieve improvements to the air navigation system and environmental benefits, thus preventing costly implementation processes.

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**NAM/CAR IMPLEMENTATION PLAN**

**SEAMLESS ATM SYSTEM**

## REGIONAL PLANNING PROCESS

The regional planning process should be conducted in accordance with the global plan initiatives (GPIs) of the Global Plan (Doc 9750) and the ICAO vision for an integrated ATM system, harmonized and interoperable, as established in the Global ATM Operational Concept (Doc 9854).

The objective is to achieve the maximum level of inter-operability and harmonization among sub-systems for a seamless and interoperable regional ATM system for all users during all phases of flight, complying with agreed levels of safety, providing optimum economic operations, to be environmentally sustainable and to fulfil national aviation security requirements.

The planning should be developed based on clearly defined performance objectives. The planning horizon should be focused on the strategies of development, activities or main tasks for two periods – that of less than 5 years (short-term) and 6 to 10 years (medium-term). Some already identified tasks to be analyzed beyond this period may be included if they conform to ICAO ATM requirements**.**

## ATM PERFORMANCE OBJECTIVES

The performance objectives for regional ATM work programmes should be developed using a performance approach so as to reflect the necessary activities needed to support regional ATM system implementation.

During its life cycle, the performance objectives may change in a dynamic manner depending on the ATM system's evolution; therefore, these should be coordinated with and available to all interested parties within the ATM Community in order to achieve timely communication throughout the implementation process. The establishment of collaborative decision making processes (CDM) ensures that all stakeholders are involved in and concur with the requirements, tasks and timelines.

The following sections describe aspects pertaining to the performance objectives and required changes, and how these changes foster harmonized improvements throughout the regional ATM system.

### *Benefits*

The ATM implementation strategies should provide a group of common benefits for all stakeholders and be achieved through the operational and technical activities planned in each performance objective. These benefits should be in accordance with the ICAO strategic objectives.

### *Identification of work*

Each task should be identified firstly by the activity associated with components of the ATM system when describing the tasks. According to the Doc 9854, the designators for ATM components are as follows:

- **AOM** — Airspace organization and management
- **DCB** — Demand and capacity balancing
- **AO** — Aerodrome operations

- **TS**  — Traffic synchronization
- **CM**  — Conflict management
- **AUO**  — Airspace user operations
- **ATM SDM**  — ATM service delivery management

Each designator looks to link ATM system component pertains to tasks and activities related to phases of air operations, ATC en-route, terminal and airport, capacity management, airspace management including its flexible use and aeronautical information management.

The infrastructure includes the ground technical systems and capacity required to support operations such as communications, navigation and surveillance, data processing, inter-operability of systems, information management system and spectrum management, including both civil and military systems. The following diagram shows the ATM components in relation to the phases of flight:
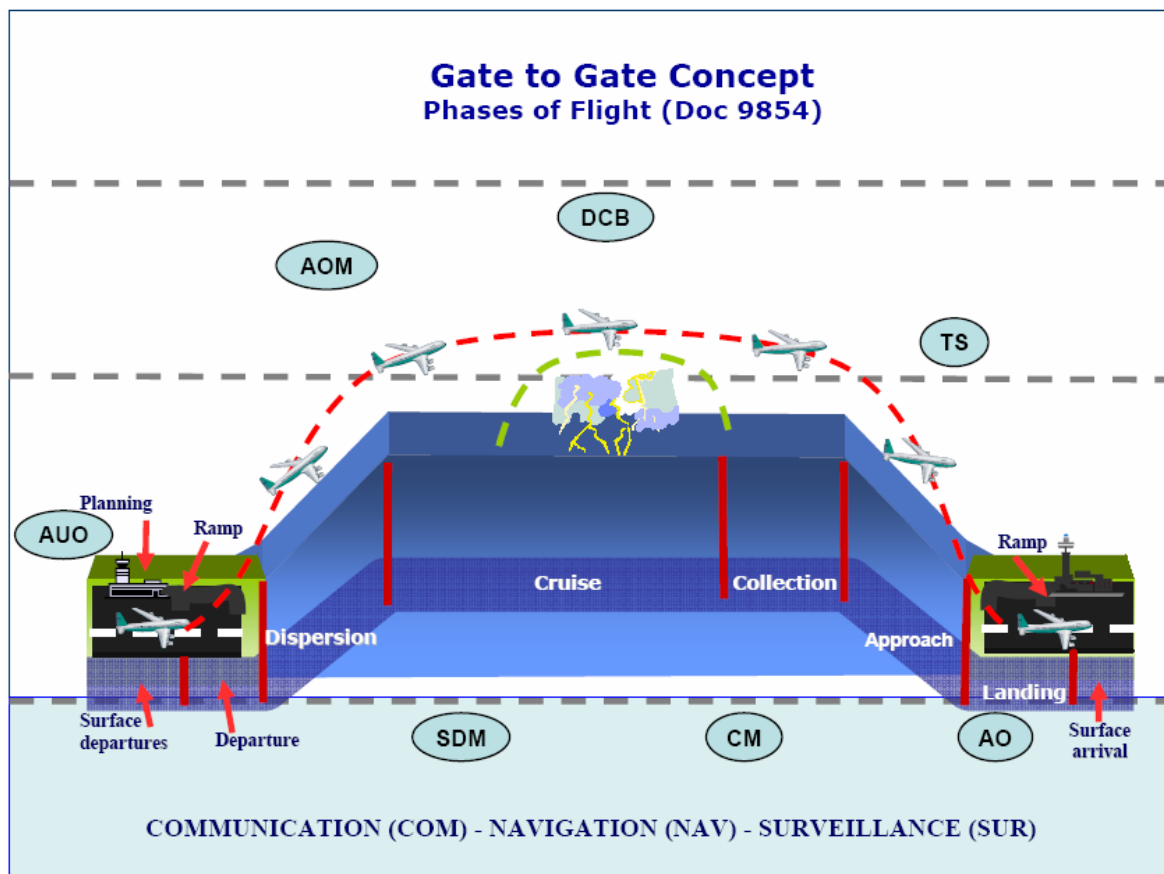


This means the need to develop short and medium term work programmes, focusing on the necessary changes to the system in which a clear work commitment will be carried out by the parties involved.

The regional work programmes should define additional tasks and activities, maintaining a direct relation with ATM system components such as airspace organization, civil-military coordination, human factors, aeronautical regulations, operational safety management systems and environmental protection, among others.

The framework for regional activities should also include the coordination of activities with military authorities who play an important role in helping to ensure that the best use is made of the available airspace resources by all airspace users while still safeguarding national security.

The following principles should be considered when developing work programmes:

- The work should be organized using project management techniques and performance-based objectives in alignment with the Global Plan and the strategic objectives of ICAO. The work programmes should be in accordance with the progress, characteristics and regional implementation needs.

- All activities involved in accomplishing the performance objectives should be designed following strategies, concepts, action plans and roadmaps which can be shared among States to align the regional work with the fundamental objective of achieving interoperability and seamlessness to the highest level.

- The planning of all activities should include optimizing human resources, as well as encouraging dynamic use of electronic communication between States such as the Internet, videoconferences, teleconferences, e-mail, telephone and facsimile. It should be ensured that all resources will be efficiently used, avoiding any duplication or unnecessary work.

- The new work process and methods should ensure that performance objectives can be measured against timelines and the regional progress achieved can be easily reported to the Air Navigation Commission and to the ICAO Council.

*Status*

The status is mainly focused on monitoring the progress of the implementation activity as it progresses toward a specific completion date. The status of the activity is defined as follows:

| | |
|---|---|
| ■**Valid** | the feasibility and benefits of an activity has been confirmed, work has been initiated but the activity itself has not been finalized. |
| ■**Completed** | implementation of the activity has been finalized by the involved parties. |
| ■**Tentative** | the feasibility and benefits of an activity investigated or to be developed. |

A tentative status indicates a potential activity; normally this activity will not be included in the regional planning documents unless it is an ICAO defined requirement.

*Relationship between Performance Objectives and Global Plan Initiatives*

The 23 GPIs provide a global strategic framework and are designed to contribute to achieving the regional performance objectives and to support the logical progression of regional implementation work programmes.

Each performance objective should be referenced to the pertinent GPIs. The goal is to ensure that the work process will be integrated into the global planning framework

**NATIONAL ACTION PLANS**

States should develop their own national action plans reflecting the specific activities or tasks along with the expected benefits to be obtained and the date by which each should be completed according to the national needs and based on the regionally-agreed performance objectives.

The activities should include the necessary detailed actions to successfully achieve the national performance objectives, relating these activities with the short and medium term regionally-agreed performance objectives.

National plans should identify the individuals or teamwork responsible for achieving the objectives as well as a means for monitoring and eventually reporting progress on the actions to ICAO. The responsibilities and time-tables should be clearly defined so that the involved parties are aware of their commitments throughout the planning process.

Additionally, national action plans should include adequate means to provide information on implementation progress achieved such as through a periodic reporting process. This facilitates senior management levels' efforts to prioritize the actions and resources required. The same information provided to ICAO will allow feedback and assistance to be provided specific for each Region as they work to achieve a Global ATM system.

**CAR/SAM REGIONS PERFORMANCE OBJECTIVES**

| OPTIMIZE THE ATS ROUTE STRUCTURE EN-ROUTE AIRSPACE | | | |
|---|---|---|---|
| **Benefits** | | | |
| **Environment Efficiency** | • reductions in fuel consumption;<br>• ability of aircraft to conduct flight more closely to preferred trajectories;<br>• increase in airspace capacity;<br>• facilitate the utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency. | | |
| *Strategy*<br>*(2008 - 2015)* | | | |
| **TASK** | **DESCRIPTION** | **START-END** | **STATUS** |
| **AOM** | ***En-route airspace*** | | |
| | Develop regional action plan. | | |
| | Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN and, in particular, RNAV/5, taking into account interregional harmonization. | | |
| | Develop performance measurement plan. | | |
| | Formulate safety plan. | | |
| | Establish collaborative decision making (CDM) process. | | |
| | Publish national regulations for aircraft and operators approval using PBN manual as guidance material. | | |
| | Identify training needs and develop corresponding guidelines. | | |
| | Formulate system performance monitoring plan. Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan. | | |
| **References** | 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. | | |

<table>
<tr><td colspan="5" align="center"><b>OPTIMIZE THE ATS ROUTE STRUCTURE IN<br>TERMINAL AIRSPACE</b></td></tr>
<tr><td colspan="5" align="center"><b>Benefits</b></td></tr>
<tr><td><b>Environment<br>Efficiency</b></td><td colspan="4">
• reductions in fuel consumption;<br>
• ability of aircraft to conduct flight more closely to preferred trajectories;<br>
• increase in airspace capacity;<br>
• facilitate utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency.</td></tr>
<tr><td colspan="5" align="center"><i>Strategy<br>(2008 - 2015)</i></td></tr>
<tr><td><b>TASK</b></td><td align="center"><b>DESCRIPTION</b></td><td colspan="2"><b>START-<br>END</b></td><td><b>STATUS</b></td></tr>
<tr><td><b>AOM</b></td><td align="center"><b><i>In terminal airspace</i></b></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Develop State PBN implementation plan.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), instrument flight procedures, holding, approach and associated procedures, on the basis of PBN and, in particular RNAV/1 and Basic-RNP12.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Develop performance measurement plan.</td><td></td><td></td><td></td></tr>
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<tr><td></td><td>Establish collaborative decision making (CDM) process.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Publish national regulations for aircraft and operators approval using PBN manual as guidance material.</td><td></td><td></td><td></td></tr>
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<tr><td></td><td>Formulate system performance monitoring plan.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Develop a regional strategy and work programme for implementation.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan.</td><td></td><td></td><td></td></tr>
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| IMPLEMENT RNP APPROACHES | | | |
|---|---|---|---|
| **Benefits** | | | |
| **Efficiency**<br>**Safety** | • Improvements in capacity and efficiency at aerodromes.<br>• Improvements in safety at aerodromes. | | |
| *Strategy*<br>**(2008-2015)** | | | |
| **TASK** | **DESCRIPTION** | **START-END** | **STATUS** |
| | Develop State PBN implementation plan. | | |
| | Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement RNP APCH with Baro-VNAV in accordance with assembly resolution A36-23, and RNP AR APCH where beneficial. | | |
| | Develop performance measurement plan. | | |
| | Formulate safety plan. | | |
| | Establish collaborative decision making (CDM) process. | | |
| | Publish national regulations for aircraft and operators approval using PBN manual as guidance material. | | |
| | Identify training needs and develop corresponding guidelines. | | |
| | Formulate system performance monitoring plan. | | |
| | Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan. | | |
| **References** | 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. | | |

| ENHANCE CIVIL/MILITARY COORDINATION AND CO-OPERATION | | | |
|---|---|---|---|
| **Benefits** | | | |
| **Efficiency** | • increase airspace capacity; | | |
| **Continuity** | • allow a more efficient ATS route structure<br>• ensure safe and efficient action in the event of unlawful interference;<br>• make available military restricted airspace more hours of the day so that aircraft can fly on their preferred trajectories; and<br>• improve search and rescue services. | | |
| *Strategy*<br>*(2008-2012)* | | | |
| **TASK** | **DESCRIPTION** | **START-END** | **STATUS** |
| **AOM** | Develop guidance material on civil/military coordination and co-operation to be used by States/Territories to develop national policies, procedures and rules. | | |
| | Establish civil/military coordination bodies. | | |
| | Arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defence units. | | |
| | Conduct a regional review of special use airspace. | | |
| | Develop a regional strategy and work programme for implementation of flexible use of airspace in a phased approach beginning with more dynamic sharing of restricted airspace while working towards full integration of civil and military aviation activities by **2012**. | | |
| | Monitor implementation progress. | | |
| **References** | GPI/1: flexible use of airspace. | | |

| ALIGN UPPER AIRSPACE CLASSIFICATION | | | |
|---|---|---|---|
| **Benefits** | | | |
| **Efficiency**<br><br><br><br><br><br>**Continuity** | • better utilization of data link communication;<br>• optimize use of flight plan data processing systems;<br>• enhance airspace management coordination, message exchange capabilities and utilization of flexible and dynamic airspace management techniques;<br>• harmonization of interregional coordination processes;<br>• improvement of airspace interoperability and seamlessness; and<br>• ensure the provision of positive air traffic control services to all aircraft operations. | | |
| *Strategy*<br>*(Target: 2008)* | | | |
| **TASK** | **DESCRIPTION** | **START-END** | **STATUS** |
| **AOM** | Develop a regional implementation strategy and work programme for the implementation of ICAO Annex 11 airspace Class A above FL 195. | | |
| | Identify key stakeholders, ATCOs, pilots, and relevant international organisations for coordination and cooperation on changes for new airspace organization, using a CDM process. | | |
| | Develop new national airspace organization in accordance with ICAO provisions, as needed. | | |
| | Coordinate changes for regional and national documents;<br>▪ Doc 8733, CAR/SAM ANP;<br>▪ AIP; and,<br>▪ ATS letters of agreement. | | |
| | Carry out improvements in ground systems to support new airspace organization configurations, as necessary. | | |
| | Publish national regulatory material for implementation of new rules and procedures to reflect airspace organizational changes. | | |
| | Train ATCOs and pilots in new procedures, including all civil and military airspace users, as required; | | |
| | Monitor implementation progress. | | |
| **References** | GPI/4: align upper airspace classification. | | |

| IMPROVE DEMAND AND CAPACITY BALANCING | | | |
|---|---|---|---|
| **Benefits** | | | |
| **Environment**<br><br>**Efficiency**<br><br><br><br><br><br><br><br><br><br>**Safety** | • reduction in weather- and traffic-induced holding, leading to reduced fuel consumption and emissions;<br>• improved and smoother traffic flows;<br>• improved predictability;<br>• improved management of excess demand for service in ATC sectors and aerodromes;<br>• improved operational efficiency;<br>• enhanced airport capacity;<br>• enhanced airspace capacity; and<br>• improved safety management. | | |
| ***Strategy***<br>***Near term (2008)*** | | | |
| **TASK** | **DESCRIPTION** | **START-END** | **STATUS** |
| **DCB** | Identify key stakeholders (ATC service providers and users, military authorities, airport authorities, aircraft operators and relevant international organisations) for purposes of coordination and cooperation, using a CDM process. | | |
| | Identify and analyse traffic flow problems and develop methods for improving efficiencies on a gradual basis, as needed, through enhancements in current:<br>    o airspace organization and management (AOM) and ATS routes structure (unidirectional routes) and SID and STARS;<br>    o communication, navigation and surveillance systems;<br>    o aerodrome capacity;<br>    o ATS capacity;<br>    o training for pilots and Controllers; and<br>    o ATS letters of agreement. | | |
| | Define common elements of situational awareness between FMUs;<br>    o common traffic displays,<br>    o common weather displays (Internet),<br>    o communications (teleconferences, web), and<br>    o daily teleconference/messages methodology advisories. | | |
| | Develop methods to establish demand/capacity forecasting; | | |
| | Develop a regional strategy and work programme for harmonized implementation of ATFM service. | | |

| *Medium term (2010)* | | | |
|---|---|---|---|
| | Develop a regional strategy for the implementation of flexible use of airspace (FUA);<br>   o  assess use of airspace management processes;<br>   o  improve current national airspace management to adjust dynamic changes in tactical stage to traffic flows;<br>   o  introduce improvements in ground support systems and associated procedures for the extension of FUA with dynamic airspace management processes;<br>   o  implement dynamic ATC sectorization in order to provide the best balance between demand and capacity to respond in real-time to changing situations in traffic flows, and to accommodate in short-term the preferred routes of users. | | |
| | Define common electronic information and minimum databases required for decision support and alerting systems for interoperable situational awareness between Centralized ATFM units. | | |
| | Develop regional procedures for efficient and optimum use of aerodrome and runway capacity. | | |
| | Develop a regional ATFM procedural manual to manage demand/capacity balancing. | | |
| | Develop a regional strategy and framework for the implementation of a Centralized ATFM unit. | | |
| | Develop operational agreements between Centralized ATFM units for interregional demand/capacity balancing. | | |
| | Monitor implementation progress. | | |
| **References** | GPI/1: flexible use of airspace; GPI/6: air traffic flow management; GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support and alerting systems. | | |

| IMPROVE ATM SITUATIONAL AWARENESS | | | |
|---|---|---|---|
| **Benefits** | | | |
| **Efficiency**<br><br><br><br><br><br><br>**Safety** | • enhanced traffic surveillance;<br>• enhanced collaboration between flight crew and the ATM system;<br>• improved collaborative decision-making through sharing electronic aeronautical data information;<br>• reduced of workload for both pilots and controllers;<br>• improved operational efficiency;<br>• enhanced airspace capacity;<br>• improved implementation on a cost-effective basis;<br>• improved available electronic terrain and obstacle data in the cockpit;<br>• reduced of the number of controlled flight into terrain related accidents; and<br>• improved safety management. | | |
| *Strategy*<br>*Near term (2010)* | | | |
| **TASK** | **DESCRIPTION** | **START-END** | **STATUS** |
| **SDM** | Identify parties concerned.<br>Identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing<br>    o  operational architecture design,<br>    o  characteristics and attributes for interoperability,<br>    o  data bases and software, and<br>    o  technical requirements. | | |
| | Improve ATS interfacility communication. | | |
| | Implement flight plan data processing system and electronic transmission tools. | | |
| | Implement radar data sharing programs where benefits can be obtained. | | |
| | Develop situational awareness training programmes for pilots and controllers. | | |
| | Implement ATM surveillance systems for situational traffic information and associated procedures. | | |
| | Implement ATS automated message exchanges, as required<br>    o  FPL, CPL, CNL, DLA, etc. | | |
| | Implement automated radar handovers, where able. | | |
| | Implement ground and air electronic warnings, as needed<br>    o  Conflict prediction<br>    o  Terrain proximity<br>    o  MSAW<br>    o  DAIW<br>    o  Surveillance system for surface movement. | | |
| | Implement data link surveillance technologies and applications: ADS, CPDLC, AIDC, as required. | | |

| | *Medium term (2015)* | | |
|---|---|---|---|
| | Implement additional/advanced automation support tools to increase sharing of aeronautical information <br>     o   ETMS or similar <br>     o   MET information <br>     o   AIS/NOTAM dissemination <br>     o   Surveillance tools to identify airspace sector constraints <br>     o   A-SMGC in specific aerodromes, as required. | | |
| | Implement teleconferences with ATM stakeholders. | | |
| | Monitor implementation progress | | |
| **References** | GPI/1: flexible use of airspace; GPI/6: air traffic flow management; and GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support and alerting systems; GPI/17: implementation of data link applications; GPI/18: aeronautical Information; GPI/19: meteorological systems. | | |

| PBN en-route implementation Action Plan<br>GPI 1, 4, 5, 7, 8, 10, 11, 12, 16, 21,23 | Start | End | Remarks |
|---|---|---|---|
| **1    Airspace Concept** | | | |
| 1.1    Establish and prioritize Strategic Objectives (Safety, Capacity, Environment, etc) | | | |
| 1.2    Collect air traffic data to understand airspace traffic flows in a particular airspace. | | | |
| 1.3    Analyse navigation capability of the fleet | | | |
| 1.4    Analyse communication, ground navigation (VOR, DME) and surveillance for navigation specification and reversionary mode compliance. | | | |
| 1.5    Optimise the airspace structure, by reorganising the network or implementing new routes based on the strategic objective of the airspace concept. Consider Airspace Modelling,  ATC simulations (fast time and/or real time), Live Trials, etc. | | | |
| **2    Develop Performance Measurement Plan** | | | |
| 2.1    Prepare Performance Measurement Plan, including gas emission, safety, efficiency, etc. | | | |
| 2.2    Conduct Performance Measurement Plan | | | |
| **3    Airspace safety assessment** | | | |
| 3.1    Determine which methodology shall be used to evaluate airspace safety and ATS routes spacing, depending on the navigation specification. Consider Airspace Modelling,  ATC simulations (fast time and/or real time), Live Trials, etc. | | | |
| 3.2    Prepare a data collection programme for airspace safety assessment | | | |
| 3.3    Prepare preliminary airspace safety assessment | | | |
| 3.4    Prepare final airspace safety assessment | | | |
| **4    Establish collaboration decision making (CDM) process** | | | |
| 4.1    Coordinate planning and implementation needs with Air Navigation Service Providers, Regulators, Users, aircraft operators and military authorities | | | |
| 4.2    Establish implementation date | | | |

| PBN en-route implementation Action Plan<br>GPI 1, 4, 5, 7, 8, 10, 11, 12, 16, 21,23 | | | |
|---|---|---|---|
| | **Start** | **End** | **Remarks** |
| 4.3 Establish the documentation format of CAR/SAM RNAV/RNP Website | | | |
| 4.4 Report planning and implementation progress to the corresponding Regional Office | | | |
| **5** **ATC Automated Systems** | | | |
| 5.1 Evaluate the PBN implementation in the ATC Automated Systems, considering the Amendment 1 to the PANS/ATM (FPLSG). | | | |
| 5.2 Implement the necessary changes in the ATC Automated Systems | | | |
| **6** **Aircraft and operators approval** | | | |
| 6.1 Be aware of the national implementation programme and of the required navigation specifications | | | |
| 6.2 Analyse aircraft approval requirements, aircrew and operator approval requirements for the navigation specifications to be implemented, as contained in the ICAO PBN Manual | | | |
| 6.3 Publish the national regulations to implement the required ICAO navigation specifications | | | |
| 6.4 Approval of aircraft and operators for each type of procedure and navigation specification | | | |
| 6.5 Establish and keep updated a record of approved aircraft and operators | | | |
| 6.6 Verify operations with a continuing monitoring programme | | | |
| **7** **Standards and Procedures** | | | |
| 7.1 Evaluate regulations for GNSS use, and if such were the case, proceed to its publication. | | | |
| 7.2 Finalize implementation of WGS-84 | | | |
| 7.3 Develop and publish AIC notifying PBN implementation planning | | | |
| 7.4 Publish AIP Supplement including applicable standards and procedures | | | |

| PBN en-route implementation Action Plan<br>GPI 1, 4, 5, 7, 8, 10, 11, 12, 16, 21,23 | | Start | End | Remarks |
|---|---|---|---|---|
| 7.5 | Review Procedural Manuals of the ATS units involved | | | |
| 7.6 | Update Letters of Agreement between ATS units | | | |
| 7.7 | Develop amendment to the regional documentation, if necessary | | | |
| 7.8 | Provide procedures to accommodate non-approved RNAV/RNP aircraft, when applicable | | | |
| 7.9 | Identify transition areas and procedures, if necessary | | | |
| 7.10 | Conduct ATC simulations to identify the workload/operational factors, if necessary, and report the simulations activities to the ATM Committee | | | |
| **8** | **Training** | | | |
| 8.1 | Develop a training programme and documentation for operators (pilots, dispatchers and maintenance) | | | |
| 8.2 | Develop training programme and documentation for Air Traffic Controllers and AIS Operators | | | |
| 8.3 | Develop training programme to regulators (aviation safety inspectors) | | | |
| 8.4 | Conduct training programmes | | | |
| 8.5 | Hold seminars oriented to operators, indicating the plans and the operational and financial benefits expected | | | |
| **9** | **Decision for implementation** | | | |
| 9.1 | Evaluate operational documentation availability (ATS, OPS/AIR) | | | |
| 9.2 | Evaluate the percentage of approved aircraft and operations (mixed equipage concerns) | | | |
| 9.3 | Review safety assessment results | | | |

| PBN en-route implementation Action Plan<br>GPI 1, 4, 5, 7, 8, 10, 11, 12, 16, 21,23 | Start | End | Remarks |
|---|---|---|---|
| **10     System Performance Monitoring** | | | |
| 10.1   Develop post-implementation en-route operations monitoring programme | | | |
| 10.2   Execute post-implementation en-route operations monitoring programme | | | |
| **Pre operational implementation date** | | | |
| **Definitive implementation date** | | | |

| PBN TMA and Approach Action Plan GPI 5, 7, 8, 10, 11, 12 | | | |
|---|---|---|---|
| | **Start** | **End** | **Remarks** |
| **1  Airspace Concept** | | | |
| 1.1     Establish and prioritize Strategic Objectives (Safety, Capacity, Environment, etc) | | | |
| 1.2    Collect air traffic data to understand airspace traffic flows in the TMA. | | | |
| 1.3     Analyse aircraft fleet navigation capacity operating in the TMA | | | |
| 1.4     Analyse communication, ground navigation (VOR, DME) and surveillance for navigation specification and reversionary mode compliance | | | |
| 1.5     Optimise the airspace structure, by implementing new SID and STARS, based on the strategic objective of the airspace concept. Consider Airspace Modelling,  ATC simulations (fast time and/or real time), Live Trials, etc. | | | |
| **2.     Develop Performance Measurement Plan** | | | |
| 2.1    Prepare Performance Measurement Plan, including gas emission, safety, efficiency, etc. | | | |
| 2.2    Conduct Performance Measurement Plan | | | |
| **3     Airspace safety assessment** | | | |
| 3.1    Determine which methodology shall be used to evaluate airspace safety and routes spacing, depending on the navigation specification. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc. | | | |
| 3.2    Prepare a data collection programme for airspace safety assessment | | | |
| 3.3     Prepare preliminary airspace safety assessment | | | |
| 3.4     Prepare final airspace safety assessment | | | |
| **4     Establish collaboration decision making (CDM) process** | | | |
| 4.1    Coordinate planning and implementation needs with Air Navigation Service Providers, Regulators, Users, aircraft operators and military authorities | | | |
| 4.2    Establish implementation date | | | |

| PBN TMA and Approach Action Plan GPI 5, 7, 8, 10, 11, 12 | | | |
|---|---|---|---|
| 4.3 | Establish the documentation format of CAR/SAM RNAV/RNP Website | | | |
| 4.4 | Report planning and implementation progress to the corresponding Regional Office | | | |
| **5** | **ATC Automated Systems** | | | |
| 5.1 | Evaluate the PBN implementation in the ATC Automated Systems, considering the Amendment 1 to the PANS/ATM (FPLSG). | | | |
| 5.2 | Implement the necessary changes in the ATC Automated Systems | | | |
| **6** | **Aircraft and operator approval** | | | |
| 6.1 | Be aware of the national implementation programme and of the required navigation specifications | | | |
| 6.2 | Analyse aircraft approval requirements, aircrew and operator approval requirements for the navigation specifications to be implemented, as contained in the ICAO PBN Manual | | | |
| 6.3 | Publish the national regulations to implement the required ICAO navigation specifications | | | |
| 6.4 | Approval of aircraft and operators for each type of procedure and navigation specification | | | |
| 6.5 | Establish and keep updated a record of approved aircraft and operators | | | |
| 6.6 | Verify operations with a continuing monitoring programme | | | |
| **7** | **Standards and Procedures** | | | |
| 7.1 | Evaluate regulations for GNSS use, and if such were the case, proceed to its publication. | | | |
| 7.2 | Develop and publish AIC notifying PBN implementation planning | | | |
| 7.3 | Publish AIP Supplement including applicable standards and procedures | | | |
| 7.4 | Review Procedural Manuals of the ATS units involved | | | |
| 7.5 | SID and/or STAR Ground Validation and Flight Inspection/Flight Validation | | | |
| 7.6 | Data Base Validation Requirements/Procedures | | | |

| PBN TMA and Approach Action Plan GPI 5, 7, 8, 10, 11, 12 | | | |
|---|---|---|---|
| 7.5 Update Letters of Agreement between ATS units | | | |
| 7.6 Provide procedures to accommodate non-approved RNAV/RNP aircraft, when applicable | | | |
| 7.7 Conduct ATC simulations to identify the workload/operational factors, if necessary. | | | |
| **8 Training** | | | |
| 8.1 Develop a training programme and documentation for operators (pilots, dispatchers and maintenance) | | | |
| 8.2 Develop training programme and documentation for Air Traffic Controllers and AIS Operators | | | |
| 8.3 Develop training programme to regulators (aviation safety inspectors) | | | |
| 8.4 Conduct training programmes | | | |
| 8.5  Hold seminars oriented to operators, indicating the plans and the operational and financial benefits expected | | | |
| **9 Decision for implementation** | | | |
| 9.1 Evaluate operational documentation availability (ATS, OPS/AIR) | | | |
| 9.2 Evaluate the percentage of approved aircraft and operations (mixed equipage concerns) | | | |
| 9.3 Review safety assessment results | | | |
| **10 System Performance Monitoring** | | | |
| 10.1 Develop post-implementation TMA operations monitoring programme | | | |
| 10.2 Execute post-implementation TMA operations monitoring programme | | | |
| **Pre operational implementation date** | | | |
| **Definitive implementation date** | | | |

| PBN APP Action Plan GPI 1, 12, 16, 21, 23 | Start | End | Remarks |
|---|---|---|---|
| **1**      **Airspace Concept** | | | |
| 1.1      Establish and prioritize Strategic Objectives (Safety, Capacity, Environment, etc) | | | |
| 1.2      Analyse aircraft fleet navigation capacity operating in the Airport | | | |
| 1.3      Analyse communication, ground navigation (VOR, DME) and surveillance for navigation specification and reversionary mode compliance | | | |
| 1.4      Design Instrument Approach Procedure (RNP APCH/APV Baro-VNAV or RNP AR), based on the strategic objective of the airspace concept. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc. | | | |
| **2**      **Develop Performance Measurement Plan** | | | |
| 2.1      Prepare Performance Measurement Plan, including gas emission, safety, efficiency, etc. | | | |
| 2.2      Conduct Performance Measurement Plan | | | |
| **3**      **Procedure safety assessment** | | | |
| 3.1      Determine which methodology shall be used to evaluate procedure safety, depending on the navigation specification. Consider Airspace Modelling, ATC simulations (fast time and real time), Live Trials, etc. | | | |
| 3.2      Prepare a data collection programme for airspace safety assessment | | | |
| 3.3      Prepare preliminary procedure (s) safety assessment | | | |
| 3.4      Prepare final procedure (s) safety assessment | | | |
| **4**      **Establish collaboration decision making (CDM) process** | | | |
| 4.1      Coordinate planning and implementation needs with Air Navigation Service Providers, Regulators, Users, aircraft operators and military authorities | | | |
| 4.2      Establish implementation date | | | |
| 4.3      Establish the documentation format of CAR/SAM RNAV/RNP Website | | | |
| 4.4      Report planning and implementation progress to the corresponding Regional Office | | | |

| PBN APP Action Plan<br>GPI 1, 12, 16, 21, 23 | | | |
|---|---|---|---|
| **5** | **ATC Automated Systems** | | | |
| 5.1 | Evaluate the PBN implementation in the ATC Automated Systems, considering the Amendment 1 to the PANS/ATM (FPLSG). | | | |
| 5.2 | Implement the necessary changes in the ATC Automated Systems | | | |
| **6** | **Aircraft and operator approval** | | | |
| 6.1 | Be aware of the national implementation programme and of the required navigation specifications | | | |
| 6.2 | Analyse aircraft approval requirements, aircrew and operator approval requirements for the navigation specifications to be implemented, as contained in the ICAO PBN Manual | | | |
| 6.3 | Publish the national regulations to implement the required ICAO navigation specifications | | | |
| 6.4 | Approval of aircraft and operators for each type of procedure and navigation specification | | | |
| 6.5 | Establish and keep updated a record of approved aircraft and operators | | | |
| 6.6 | Verify operations with a continuing monitoring programme | | | |
| **7** | **Standards and procedures** | | | |
| 7.1 | Evaluate regulations for GNSS use, and if such were the case, proceed to its publication. | | | |
| 7.2 | Develop and publish AIC notifying PBN implementation planning | | | |
| 7.3 | Publish AIP Supplement including applicable standards and procedures | | | |
| 7.4 | Review Procedural Manuals of the ATS units involved | | | |
| 7.5 | Update Letters of Agreement between ATS units, if necessary | | | |
| 7.6 | Provide procedures to accommodate non-approved RNAV/RNP aircraft, when applicable | | | |
| 7.7 | Conduct ATC simulations to identify the workload/operational factors, if necessary. | | | |

| PBN APP Action Plan<br>GPI 1, 12, 16, 21, 23 | | | |
|---|---|---|---|
| **8**    **Training** | | | |
| 8.1   Develop a training programme and documentation for operators (pilots, dispatchers and maintenance) | | | |
| 8.2   Develop training programme and documentation for Air Traffic Controllers and AIS Operators | | | |
| 8.3   Develop training programme to regulators (aviation safety inspectors) | | | |
| 8.4   Conduct training programmes | | | |
| 8.5   Hold seminars oriented to operators, indicating the plans and the operational and financial benefits expected | | | |
| **9**    **Decision for implementation** | | | |
| 9.1   Evaluate operational documentation availability (ATS, OPS/AIR) | | | |
| 9.2   Evaluate the percentage of approved aircraft and operations (mixed equipage concerns) | | | |
| 9.3   Review safety assessment results | | | |
| **10**   **System Performance Monitoring** | | | |
| 10.1  Develop post-implementation APP operations monitoring programme | | | |
| 10.2  Execute post-implementation APP operations monitoring programme | | | |
| **Pre operational implementation date** | | | |
| **Definitive implementation date** | | | |

# ACTION PLAN FOR ATFM IMPLEMENTATION - CAR REGION

State/Organization: _____     Date: _____

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **2008** | | | | | | | |
| 1 | C, D GPI-6 14/48 | Develop a regional strategy and work programme for harmonized implementation of ATFM service. | Completed | E/T/OI | Work programme | 2007 | |
| 2 | D GPI-6 | Identify key stakeholders (ATC service providers and users, military authorities, airport authorities, aircraft operators and relevant international organisations) for purposes of coordination and cooperation, using a CDM process. | Completed | E/T/OI | CDM process | 2007 | CDM guidelines in WP/07. |
| 3 | D GPI-7 13/2 | Identify and analyse traffic flow problems and develop enhancements in current: | Completed | E/T/OI | Improvements to operational capacity | GRPCS/13 | GREPECAS has defined main traffic flows and homogeneous CAR/SAM areas. |
| | GPI-7 14/48 | airspace organization and management (AOM) and ATS routes structure (unidirectional routes) and SID and STARS; | Valid | E/T/OI | Airspace improvements | | Guidelines are presented in WP/06. |
| | GPI-6 | publication of the correspondent regulation; | Valid | OACI | Amendment to Doc 7030. | 2008 | Publish standards in AIPs. |
| | GPI-16 14/48 | ATM automation; | Completed | E/T/OI | Action plan of E/T/OI | 2007 | Additional guidelines are presented in WP/15 from the ones approved by GREPECAS. |
| | GPI-21-22 | communication, navigation and surveillance systems; | Valid | E/T/OI | Define requirements | TBD | |
| | GPI-14 | aerodrome capacity; | Completed | E/T/OI | Aerodrome Acceptance Rate (AAR) | 2007 | Guidelines in CAR/SAM ATFM CONOPS. Require to publish capacity. |
| | GPI-6 | ATS capacity; | Valid | E/T/OI | ATS capacity | 2008 | Guidelines in the CAR/SAM ATFM CONOPS. Require to determine and publish the capacity. |
| | GPI-6 13/67 | training for pilots and Controllers; and | Valid | E/T/OI | Training Programme | 2008 | Guidelines are presented in WP/07. |
| | GPI-6 14/48 | ATS letters of agreement. | Valid | E/T/OI | ATS agreements | 2008 | E/CAR completed. |
| 4 | D GPI-9 14/48 | Define common elements of situational awareness between FMUs; | Valid | E/T/OI | Enhance situational awareness | 2008 | Action plan of E/T/OI. |

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | GPI-9 | common traffic displays; | Valid | E/T/OI | Define tools | 2008 | Analyze ETMS or similar applications. |
| | GPI-9 | common weather displays (Internet); | Valid | E/T/OI | Define tools | 2008 | |
| | GPI-9 | communications (teleconferences, web); and, | Valid | E/T/OI | Define tools | 2008 | Weekly teleconferences carried out in Piarco FIR between January-April 2007. |
| | D GPI-6 | Define daily teleconference/messages methodology advisories. | Completed | E/T/OI | Teleconferences methodology | 2007 | Guidelines in WP-07. Requires an agreement. |
| 5 | D GPI-6 | Develop methods to establish demand/capacity forecasting. | Valid | E/T/OI | Traffic forecast methodology | 2008 | Electronic tools are being analysed. |
| | | **2010** | | | | | |
| 6 | D GPI-1 | Develop a regional strategy for the implementation of flexible use of airspace (FUA); -assess use of airspace management processes; -improve current national airspace management to adjust dynamic changes in tactical stage to traffic flows; -introduce improvements in ground support systems and associated procedures for the extension of FUA with dynamic airspace management processes; and, | Valid | E/T/OI | FUA implementation | 2010 | Requires analysing RAN CAR/SAM/3 recommendations. |
| | D GPI-6 | Implement dynamic ATC sectorization in order to provide the best balance between demand and capacity to respond in real-time to changing situations in traffic flows, and to accommodate in short-term the preferred routes of users. | Valid | E/T/OI | Dynamic Sectorization | 2010 | |
| 7 | GPI-16 | Define common electronic information and minimum databases required for decision support and alerting systems for interoperable situational awareness between Centralized ATFM units. | Valid | E/T/OI | | 2010 | Analyze ETMS or similar applications. |
| 8 | D GPI-6 | Develop regional procedures for efficient and optimum use of aerodrome and runway capacity. | Valid | E/T/OI | Improve aerodrome capacity | 2010 | Requires development of methodology to optimize runway occupancy. |
| 9 | D GPI-6 | Develop a regional ATFM procedural manual to manage demand/capacity balancing. | Valid | E/T/OI | Regional ATFM Procedures | 2010 | Requires development of regional manual in accordance with SUPPs. |
| 10 | D GPI-6 13/64 | Develop a regional strategy and framework for the implementation of a Centralized ATFM unit. | Completed | E/T/OI | Centralized ATFM strategy | GRPCS/13 | Regional guidelines in CAR/SAM ATFM CONOPS. |
| 11 | D GPI-6 | Develop operational agreements between Centralized ATFM units for interregional demand/capacity balancing. | Valid | E/T/OI | Agreements between Central ATFM units. | 2010 | |

**ACTION PLAN FOR THE FOLLOW-UP AND IMPLEMENTATION OF AIR-GROUND AND GROUND-GROUND COMMUNICATIONS**

State/Organization: _____     Date: _____

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | A, D GPI-17 13/71 a) | Improve or mitigate the VHF and HF/SMA ( R ) coverage | | States and International Organizations. | Compliance with the required coverage | 2007 | |
| 2 | A, D GPI-17 13/71 b) | Implement required satellite voice communications | | States and International Organizations. | Implement the required voice communications | 2009 | |
| 3 | A, D GPI-17 13/71 b) | Review and proposal for amendment corresponding to the FASID Table CNS 2A, according to the results of action 13/71 a). | | States and International Organizations. | Proposal for amendment | 2007 | |
| 4 | A, D GPI-17 13/71 c) | Inform the ICAO NACC Regional Office regarding the progress on actions a) and b) of Con. 13/71 | | States and International Organizations. | Information sent | 2008 | |
| 5 | A, D GPI-17 13/72 a) | Prepare an execution Plan of the progressive air-ground data links, based on the Plan of activities and the Implementation Programme presented in Appendixes AW and AX to Agenda Item 3 of the GREPECAS/13 Report. | | States and International Organizations. | Prepared Plan | 2009 | |
| 6 | A, D GPI-17 13/72 b) | Review and proposal for amendment corresponding to the FASID Table CNS 2A, according to the results of action 13/72 a). | | States and International Organizations. | Proposal for amendment | 2008 | |
| 7 | A, D GPI-17 13/72 c) | Inform the ICAO NACC Regional Office regarding the progress on actions a) and b) of Con. 13/72 | | States and International Organizations. | Information sent | 2008 | |
| 8 | A, D GPI-17 13/74 | Forward the proposal for amendment to the ATN Regional Plan format. | | ICAO | Proposal for amendment forwarded | 2008 | |
| 9 | A, D GPI-17 13/75 a) | Analyse requirements and prepare plans to implement ATN ground-ground applications, such as AMHS and AIDC. | | States and International Organizations. | Prepared Plan | 2008 | |
| 10 | A, D GPI-17 13/75 a) | Inform the ICAO NACC Regional Office regarding the results of action a) of Con. 13/75. | | States and International Organizations. | Information sent | 2008 | |
| 11 | A, D GPI-17 13/78 | Carry out activities for the deployment of the ATN and its applications according to the deadlines and strategies presented in Appendix BA to Agenda Item 3 of the GREPECAS/13 Report. | | States and International Organizations. | Deployment of the ATN according to planned dates. | 2009 | |
| 12 | A, D GPI-17 13/79 | Develop national plans for the implementation of the AMHS and the AIDC, contributing to the development of the ATM automation. | | States and International Organizations. | Prepared Plan | 2009 | |
| 13 | A, D GPI-17 14/53 | Forward the proposal for amendment of the FASID Table CNS 2A that was reviewed by the GREPECAS/14. | | ICAO | Proposal for amendment forwarded | 2007 | |

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|-----|------|------|------|------|------|------|------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 14 | A, D GPI-17 GRP14 pa. 3.6.3.17 | Forward the Table format proposal for the ATN air-ground applications regional plan, presented in Appendix AD to the Report on Agenda Item 3 of the GREPECAS/14 Report. | | ICAO | Proposal for amendment forwarded | 2008 | |

## ACTION PLAN FOR THE GNSS IMPLEMENTATION FOLLOW-UP - CAR REGION

State/Organization: _____          Date: _____

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | A, D Rec 6/1 b) GPI-21 | ***Recommendations of the AN-Conf/11 for the transition to satellite-based air navigation*** Adopt measures to achieve, as soon as possible, worldwide navigation capability to at least APV I performance. | | States and air navigation services Providers | Adopted measures | 2009 | |
| 2 | A, D Rec 6/1 c) GPI-21 | Take note of the available and upcoming SBAS navigation services providing for APV operations. | | States and air navigation services Providers | Take note | 2007 | |
| 3 | A, D Rec 6/1 c) GPI-21 | Take the necessary steps towards installation and certification of SBAS capable avionics. | | States and airspace users | Installed and certified avionics | 2009 | |
| 4 | A, D GPI-21 12/45 a) | ***New guidelines and regional strategy for the GNSS transition*** Take into account the "Regional Guidelines for the transition to the GNSS" and the "Regional strategy for the introduction and application of non visual aids to approach, landing and departure*"* | | States and International Organizations | Guidelines and Strategy applied | 2009 | |
| 5 | A, D GPI-21 Table   CNS 3 13/84 a) | ***Studies for a CAR/SAM Regional SBAS solution*** Continue introducing the GNSS in an evolutionary and coordinated manner, according to the ICAO Global Plan. | | States and International Organizations | Introduce GNSS | 2009 | |
| 6 | A, D GPI-21 Table   CNS 3 13/84 a) | Conducting the studies for a CAR/SAM regional SBAS solution; and applying other augmentations, also taking into account that added benefits should help to justify the cost of reaching the ultimate goal of migrating to the GNSS once ground-based aids are dismantled. | | States and International Organizations | Studies carried out | 2008 | |
| 7 | A, D GPI-21 13/84 d) | Interested parties in participating in the Project RLA/03/902 should consider the revised rates to join this project. | | States and International Organizations | Participation in the Project | 2007 | |
| 8 | A, D GPI-21 13/85 | Foster the use of GNSS in diverse sectors of their respective States and disseminate the results of the studies on the solution of SBAS augmentation. | | States and International Organizations | | 2009 | |
| 9 | A, D GPI-21 GRP14 3.6.3.20 to 28 | Follow-up to the studies and results of the regional projects RLA/00/009 and RLA/03/902 on the SBAS augmentation solution in the CAR/SAM Regions. | | States and International Organizations | Consider the results of the studies | 2008 | |

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 10 | A, D GPI-21 14/55 | Take note that the SBAS solutions proposed for the CAR/SAM Regions should be oriented to achieve at least APV I capability. | | States and International Organizations | Proposed SBAS solution to at least APV I performance | 2008 | |
| 11 | A, D GPI-21 | **_Follow-up to the SARPs and ICAO guidelines and policies on GNSS_** Reply State Letter Ref.: AN 7/1.3.91-07/31 dated 11 May 2007. | | | | 24-08-07 | |
| 12 | A, D GPI-21 GRP13 pa. 3.6.3.61 | Follow-up and implement GNSS in accordance to the SARPs and ICAO guidelines. | | States and International Organizations | Take note and issue comments | 2009 | |
| 14 | A, D GPI-21 Table CNS 3 14/56 a) | **_Progressive deactivation of conventional radio aids_** Analyse the service provided by each NDB station and the existence of procedures with other aids such as VOR/DME and GNSS-RNAV, as well as the aircraft capacity/development that operate in the serviced airspace. | | States, International Organizations and airspace users | Conduced analysis | 2008 | |
| 15 | A, D GPI-21 Table CNS 3 14/56 b) | Based on the results of the action in 14/56 a) and on the Table format presented in Appendix AF to the Report on Agenda Item 3 of the GREPECAS/14 Meeting, prepare a progressive deactivation plan of NDB stations. | | States and International Organizations | Develop and implement the Plan to deactivate NDB stations. | 30-Nov-07 | |
| 16 | A, D GPI-21 Table CNS 3 14/57 | **_Update of the Regional Navigation Systems Plan_** Taking into account the results of actions in 15/46 and the GNSS development, to review and propose amendments to the FASID Table CNS 3. | | States, International Organizations and GREPECAS | Amendment to the FASID Table CNS 3 | | |
| 17 | A, D GPI-21 GRP14 pa. 3.6.3.25 | **_GNSS training activities_** Participate in the GNSS Advanced Course that will be held in the ICAO NACC Regional Office in Mexico City from 24 to 28 September 2007. | | States and International Organizations | Participate in the GNSS Course | 24-Sep-07 | |

# ACTION PLAN FOR THE FOLLOW-UP AND IMPLEMENTATION OF SURVEILLANCE SYSTEMS - CAR REGION

State/Organization: _____     Date: _____

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | A, D GPI-09 GRP14 pa 3.6.3.43 | **_Global Plan Strategy GPI-09 - Situational Awareness_** Take note of GPI-09 - Situational awareness as a global strategy for data-based surveillance implementation. (Appendix A) | | States and International Organizations | Knowledge of GPI-09 from the Global air navigation Plan | 2007 | |
| 2 | A, D GPI-09 | **_ICAO SARPs and guidelines on Surveillance Systems_** Take into account and follow-up the Surveillance Systems SARPs and ICAO guidelines | | States and International Organizations | Knowledge and application of the Surveillance SARPs | 2008 | |
| 3 | A, D GPI-09 GRP14 pa 3.6.3.44 | **_Preliminary Regional Strategy for the deployment of ADS-B and ADS-C_** Take into account the "Preliminary Regional Strategy for the Deployment of ADS-C and ADS-B" and follow-up GREPECAS guidelines regarding the consolidation of this strategy into a Surveillance Systems Regional Unified Strategy." (Appendix B) | | States and International Organizations | Preliminary regional strategy used to plan and deploy ADS. Follow-up to the evolution | 2009 | |
| 4 | A, D GPI-09 13/87 | **_Initiatives for the implementation of ADS-B, ADS-C as well as other Surveillance Systems_** Assess the convenience to establish and implement ADS-B trials, as well as other surveillance systems. | | States and International Organizations | ADS-B Trials | 2008 | |
| 5 | A, D GPI-09 Table CNS 4A GRP14 pa 3.6.3.44 | Continue the adoption of initiatives for the ADS-B, ADS-C and other surveillance systems planning and implementation, according to operational requirements. (Appendix C) | | States and International Organizations | Established initiatives | 2008 | |
| 6 | A, D GPI-09 Table CNS 4A GRP14 pa 3.6.3.51 | **_Update of the Surveillance Systems Regional Plan_** Considering the results of the previous actions and the development of the Surveillance Systems, to review and propose amendments to Table CNS 4A - Surveillance Systems of the FASID. | | States and International Organizations | Amendment to Table CNS4A, FASID | 2009 | |
| 7 | A, D GPI-09 11/47 12/48 12/49 13/88 | **_Radar data exchange_** Establish and implement bilateral/multilateral agreements for radar data exchange. | | States and International Organizations | Radar data exchange established | 2008 | |

# ACTION PLAN FOR THE IMPROVEMENT AND DEVELOPMENT OF ATM SITUATIONAL AWARENESS - CAR REGION

State/Organization: _____          Date: _____

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|-----|------|------|------|------|------|------|------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | | **Near term (2010)** | | | | | |
| 1 | D GPI-9 14/43 a) | Identify the feasibility to establish the bilateral/multilateral agreements for ATM automated systems. | Valid | E/T/OI | Agreements for ATS automated systems | | |
| 2 | D GPI-9 14/44 | Identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing: | Valid | E/T/OI | Requirements for ATM surveillance | | |
| | | - operational architecture design, - characteristics and attributes for interoperability, - data bases and software, and - technical requirements | | | | | |
| 3 | D GPI-7 Tables CNS1A CNS1C 12/37 | Improve ATS voice and data interfacility communication. | Valid | E/T/OI | Implementation of FASID Table 1-A, and identify other ATS comms. requirements | | |
| 4 | D GPI-9 13/79 | Implement flight plan data processing system and electronic transmission tools. | Valid | OACI | Improve ATM surveillance | | |
| 5 | D GPI-9 Table CNS 4A 14/48 | Implement radar data sharing programs where benefits can be obtained. | Valid | E/T/OI | Improve ATM surveillance | | |
| 6 | D GPI-9 14/44 | Develop situational awareness training programmes for pilots and controllers. | Valid | E/T/OI | ATM situational awareness training programmes | | |
| 7 | D GPI-9 Table CNS 4A 14/44 | Implement ATM surveillance systems for situational traffic information and associated procedures. | Valid | E/T/OI | Improve ATM capacity | | |
| 8 | D GPI-9 12/31 | Implement ATS automated message exchanges, as required - FPL, CPL, CNL, DLA, etc. | Valid | E/T/OI | AIDC | | |
| 9 | D GPI-9 12/31 | Implement automated radar handovers, where able. | Valid | E/T/OI | Improve ATM capacity | | |

| No. | Strategic Objective/ AN-Conf/11 Global Plan/ GPI Regional Plan / FASID GREPECAS No. Con/Dec/Pa | Target Activity | Status | To be developed by | Deliverable | Target date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 10 | A, D GPI-16 12/31 | Implement ground and air electronic warnings, as needed -Conflict prediction -Terrain proximity -MSAW -DAIW -Surveillance system for surface movement | Valid | E/T/OI | Improve ATM safety management | | |
| 11 | D GPI-17 Tables CNS4A, CNS1B 13/72 | Implement data link surveillance technologies and ATN applications: ADS, CPDLC, AIDC, as required. | Valid | E/T/OI | Improve ATM surveillance | | |
| | | **Medium term (2015)** | | | | | |
| 12 | D GPI- 18/19 12/31 14/44 | Implement additional/advanced automation support tools to increase sharing of aeronautical information -ETMS or similar -MET information -AIS/NOTAM dissemination -Surveillance tools to identify airspace sector constraints. -A-SMGC in specific aerodromes, as required. | Valid | E/T/OI | Improve ATM surveillance | | |
| 13 | D GPI-6 14/44 | Implement teleconferences with ATM stakeholders. | Valid | E/T/OI | Improve CDM Process | | |

# PLAN DE ACCIÓN PARA LA IMPLEMENTACIÓN AIM - REGIÓN CAR

Estado/Organización: _____    Fecha: _____

| No. | Objetivo Estratégico Plan Mundial - GPI Plan Regional - FASID GREPECAS No. Con/Dec/Pa | Actividad Meta | Estado | A ser desarrollado por | Entregable | Fecha límite | Observaciones |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **2008** | | | | | | | |
| 1 | Seguridad, Eficiencia | *Resolver, bajo la coordinación de la Oficina NACC de la OACI, las discrepancias de las coordenadas WGS-84 de los puntos limítrofes de FIR adyacentes, publicadas en la AIP de los Estados/Territorios del Caribe y sus regiones adyacentes.* | Válida | E/T/OI | Notificar a la Oficina NACC de los avances, acuerdos y publicación de coordenadas WGS84 | 2012 | |
| 2 | Seguridad | *Contribuir a la coordinación y seguimiento a la implantación total del WGS-84 en los Estados/Territorios del Caribe. Especialmente con el levantamiento de los Obstáculos de conformidad con el Doc. 9674 de la OACI, y la armonización de las coordenadas limítrofes de las FIR para la Región CAR* | Válida | E/T/OI | Notificar a la Oficina NACC sobre los avances, acuerdos y publicación de coordenadas WGS-84 en los respectivos AIP. | 2012 | |
| 3 | Seguridad | *Efectuar la coordinación, asistencia y el seguimiento de la implementación de un Sistema de Garantía de Calidad AIM (AIS/MAP) estándar en los Estados/Territorios del Caribe.* | Válida | E/T/OI | Notificar a la Oficina NACC sobre el nivel de implantación del Sistema de Gestión de la Calidad en que se encuentran. | 2012 | En el Informe de la Reunión GREPECAS/14 se determino que esto es una tarea prioritaria para los Servicios AIM (AIS/MAP) Se aprobó por la Reunión GREPECAS/14 una Conclusión para la adopción de la parte 4 del *Manual Guía para la Implantación de un Sistema de Gestión de la Calidad en las Servicios AIS/MAP de las Regiones CAR/SAM.* |

| No. | Objetivo Estratégico Plan Mundial - GPI Plan Regional - FASID GREPECAS No. Con/Dec/Pa | Actividad Meta | Estado | A ser desarrollado por | Entregable | Fecha límite | Observaciones |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 4 | Seguridad | *Promover, con la asistencia de la Oficina NACC de la OACI, acciones de capacitación relacionadas con la correcta aplicación y cumplimiento efectivo de los requisitos de calidad de los datos aeronáuticos establecidos en los Anexos 4, 14 y 15 de la OACI, en apoyo a la determinación de Datos electrónicos del Terreno y los Obstáculos e-TOD referenciado en el Doc 9881 – Guidelines For Electronic Terrain, Obstacle and Aerodrome Mapping Information.* | Valida | E/T/OI | Seminario e-TOD | 2012 | En el Consejo de la OACI se aprobó un Proyecto Especial de Ejecución (SIP) orientado a capacitar con un *Seminario sobre las nuevas normas derivadas de las Enmiendas a los Anexos 4 y 15 en función del desarrollo de los sistemas CNS/ATM en las Regiones CAR/SAM e-TOD*, donde se reviso la importancia de llevar a cabo la capacitación en la comprensión e interpretación de las tablas de requisitos de calidad de datos aeronáuticos y datos electrónicos sobre el terreno y obstáculos. El "Seminario e-TOD" se realizó en Noviembre 2007 en Republica Dominicana. |
| 5 | Seguridad, Eficiencia | *Recomendar las acciones necesarias para desarrollar y asistir a los Estados/Territorios en la implantación del Plan de Automatización AIS aprobado para el Caribe, desarrollando las bases de datos pertinentes.* | Válida | OACI} E/T/OI | Proyecto de cooperación técnica regional orientado a resolver aspectos de deficiencias AIS, entre las que destacan: -La elaboración digital de cartas aeronáuticas para la navegación visual o instrumentos -Garantía de calidad -Automatización -Difusión de la AIP por medios electrónicos, e -Implementación y armonización de coordenadas WGS-84 | 2012 | Se informó por parte del Consejo de la OACI de la ayuda para concretar el Proyecto. En la Reunión GREPECAS/14 se informó que la OACI tendrá preparado el Modelo Global para el intercambio de la información/datos aeronáuticos (AIXM) al termino de 2007, razón por la que se convino a instar a la OACI a que defina las guías de orientación correspondientes, en el menor tiempo posible. |

| No. | Objetivo Estratégico Plan Mundial - GPI Plan Regional - FASID GREPECAS No. Con/Dec/Pa | Actividad Meta | Estado | A ser desarrollado por | Entregable | Fecha límite | Observaciones |
|-----|------|------|------|------|------|------|------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 6 | Seguridad, Eficiencia | *Revisar, proponer acciones y efectuar el seguimiento de la implantación de los requisitos AIS/MAP establecidos en el Plan de Navegación Aérea CAR/SAM y de conclusiones del GREPECAS.* | Válida | E/T/OI | Se pide notificar a la Oficina NACC sobre los planes de acción para la resolución de deficiencias AIS/MAP. | 2010 | La Tabla de Deficiencias da el seguimiento en la implantación de los requisitos AIS/MAP establecidos en el ANP. No está actualizada en la mayoría de los casos. |
| 7 | Eficiencia | *Estudiar los elementos de los factores humanos aplicados a los AIS/MAP, en correspondencia con los resultados de la Reunión AIS/MAP/SG/10.* | Válida | E/T/OI | El Grupo de Tarea Gestión de la Calidad AIM del Subgrupo AIM del GREPECAS, en sus nuevos Términos de Referencia y Programa de Trabajo, y dando cumplimiento a los requisitos establecidos en la Norma ISO 9001:2000 referente a la gestión de los Recursos Humanos, concluyó la elaboración de las guías pertinentes. | 2012 | En la Reunión GREPECAS/14 se revisó la *Aplicación de los principios de los factores humanos en la gestión de la Información Aeronáutica* (AIM), considerando que el Subgrupo AIS/MAP por principio cambia de nombre como Subgrupo AIM y que inicie las acciones necesarias para el desarrollo de los principios de los factores humanos en la gestión de la información aeronáutica y su aplicación, así como se planteó la necesidad de elaborar un Manual que contenga las directrices sobre factores humanos y un Plan para su implementación, incluyendo todas las actividades para orientar los factores humanos en los sistemas de navegación aérea. |

- END -