



International Civil Aviation Organization

South American Regional Office

**Seventh Workshop/Meeting of the SAM Implementation Group
(SAM/IG/7) - Regional Project RLA/06/901**

Lima, Peru, 23 to 27 May 2011

SAM/IG/7-WP/9

26/04/11

Agenda Item 3: Implementation of performance-based navigation (PBN) in the SAM Region

**SUPPORT IN THE IMPLEMENTATION OF PBN, ROUTE OPTIMIZATION PROJECT AND
AIR NAVIGATION SYSTEM IN SUPPORT OF PBN**

(Presented by the Secretariat)

SUMMARY

This working paper presents information on the activities taken under consideration by the CNS/ATM Subgroup with regard to the PBN Programme and its related projects *Optimize the ATS route structure en-route airspace* and *PBN supporting air navigation systems*, which should be analyzed upon by the SAM implementation group for its implementation in the Region.

References:

- Report of the second meeting of the CNS/ATM Subgroup (Mexico City, Mexico, 16-19 November 2010);
- Report of GREPECAS/15 meeting (Rio de Janeiro, Brazil, 13-17 October 2008); and
- Report of GREPECAS/16 meeting (Punta Cana, Dominican Republic, 25-29 April 2011).

ICAO strategic objectives:

*A – Safety; and
C – Environmental protection and
sustainable development of air
transport*

1 Background

1.1 The Communications, Navigation, Surveillance and Air Traffic Management Subgroup (CNS/ATM/SG) was recomposed in follow-up to GREPECAS Decision 15/34, with the aim of ensuring a better coordination on ATM and CNS topics and develop a CAR/SAM performance based planning with views to the implementation of the global ATM concept.

1.2 The CNS/ATM Subgroup was structured in terms of programmes and projects. In this respect, four programmes and nine related projects were identified to the respective programmes.

1.3 The last meeting of the CNS/ATM Subgroup (CNS/ATM/SG/2) defined and approved the work programmes of the projects established during the first meeting of the Subgroup, defining the tasks to carry out by each of the projects, as well as the responsible for their carrying out and target date of the deliverables, as follow-up to Decision CNS/ATM/1-9.

Review to the work programmes of the CNS/ATM Subgroup projects

1.4 GREPECAS/16 meeting proposed a new programme and project-based organization, with the disbanding of the existing Subgroups, the CNS/ATM Subgroup inclusive. With regard to the projects established by the CNS/ATM Subgroup, it was deemed convenient that they were independently implemented: one in the CAR Region and another in the SAM Region, with a project coordinator for the CAR Region and a project coordinator for the SAM Region.

1.5 For the implementation of PBN, a PBN Programme has been identified, with two related projects: *Optimize the ATS route structure en-route airspace* and *PBN supporting air navigation systems*.

2 Analysis

2.1 The work programmes related with the *Optimize the ATS route structure en-route airspace* and *PBN supporting air navigation systems* projects are shown in the **Appendix** to this working paper.

2.2 In this respect, the Meeting should analyze the work programmes with their respective deliverables, nominate a coordinator for each of the above mentioned projects, as well as the experts that would be drafting the tasks defined in the projects.

3 Analysis

3.1 The Meeting is invited to:

- a) Take note of the information presented;
- b) Analyze the work programmes of the PBN Programme projects shown in the Appendix to this working paper;
- c) Nominate the projects coordinators and define the people to carry out the tasks of the projects indicated in the Appendix; and
- d) Analyze any other aspects that the Meeting might deem necessary.

APPENDIX / APENDICE

PROJECT WORK PROGRAMME / PROGRAMA DE TRABAJO DEL PROYECTO

PROGRAMME/PROGRAMA:

PBN

PROJECT/PROYECTO:

A1. OPTIMIZE THE ATS ROUTE STRUCTURE EN-ROUTE AIRSPACE / OPTIMIZACION DE LA ESTRUCTURA DE RUTAS ATS EN EL ESPACIO AEREO EN RUTA

PROJECT COORDINATOR/

COORDINADOR DEL PROYECTO:

No.	Tarea / Task	Inicio Fin / Start End	Responsable / Responsable	Estado / Status	Entregable / Deliverable
1	2	3	4	5	6
A 1.1	Develop the regional action plan Elaborar el plan de acción regional	2007	GREPECAS	Completed/Finalizada	Regional action plan / Plan de acción regional
A.1.2	Develop an interface between SAM Region Version 1 and CAR Region Phase 1 Route Network Desarrollar una interface entre la versión 1 de la Región SAM y la Fase 1 de la red de rutas ATS de la Región CAR	Nov/2010	A1 Project Members / Miembros del proyecto A1	Completed/Finalizada	Interface between SAM Region Version 1 and CAR Region Phase 1 Route Network Interface entre la red de rutas version 1 de la Región SAM y la Fase 1 de la Región CAR
A.1.3	Develop proposal for amendment to the CAR/SAM Air Navigation Plan, including the interface between SAM Region Version 1 and CAR Region Phase 1 Route Network Desarrollar propuesta de enmienda al Plan de Navegación Aérea CAR/SAM, incluyendo la interface entre la versión 1 de la Región SAM y la Fase 1 de la red de rutas ATS de la Región CAR	Jan 2011/ Enero 2011	NACC Office / Oficina NACC	Valid /Válida	Proposal for amendment to the CAR/SAM Air Navigation Plan / Propuesta de enmienda al Plan de Navegación Aérea CAR/SAM
A.1.4	Publish new Version of the CAR/SAM Inter-regional ATS Routes Network, including the interface between SAM Region Version 1 and CAR Region Phase 1 Route Network Publicar la nueva versión de la Red de Rutas ATS, incluyendo la interface entre la versión 1 de la Región SAM y la Fase 1 de la red de rutas ATS de la Región CAR	2011	States /Territories Estados/Territorios	Valid/Válida	Publication in AIP new RNAV routes/ Publicación en AIP de nuevas rutas RNAV

No.	Tarea / Task	Inicio Fin / Start End	Responsable / Responsible	Estado / Status	Entregable / Deliverable
1	2	3	4	5	6
A 1.6	Conduct the first workshop among NAM, CAR and SAM States experts to review and validate the interregional routes network proposed in A 1.2 Realizar un taller de trabajo entre expertos de los Estados NAM, CAR y SAM, a fin de revisar la Red de Rutas Inter-Regional propuesta en A 1.2	May/mayo 2011 and/y May/mayo 2012	NACC and SAM Regional Offices / Oficinas Regionales NACC y SAM	Valid/Válida	Draft of ATS route network Interface between CAR and SAM Regions Network and RNP10 Gulf of Mexico Airspace/ Borrador de interface de red de rutas ATS Entre las Regiones CAR/SAM, y RNP en el espacio aéreo del Golfo de México
A 1.7	Develop an airspace concept based on CAR/SAM PBN Roadmap and in the CAR and SAM implementation plans, in order to design and implement a inter-regional trunk route network, in the upper airspace, on the basis of PBN and, in particular, RNAV/5, taking into account interregional harmonization Elaborar un concepto del espacio aéreo basado en la hoja de ruta PBN CAR/SAM y en los Planes de Implantación CAR y SAM para diseñar e implantar una red de rutas troncales inter-regionales, en el espacio aéreo superior, basado en PBN y, en particular, RNAV/5, tomando en cuenta la armonización interregional	2012	Project Coordinator / Coordinador Proyecto	Valid/Válida	Draft inter-regional routes network / Borrador de red de rutas inter-regional
A 1.8	Conduct the second workshop among NAM, CAR and SAM States experts to review the interregional routes network proposed in A 1.2 Realizar un segundo taller de trabajo entre expertos de los Estados NAM, CAR y SAM, a fin de revisar y validar la Red de Rutas Inter-Regional propuesta en A 1.2	2012	NACC and SAM Regional Offices / Oficinas Regionales NACC y SAM	Valid/Válida	Reviewed Interregional RNAV routes network. / Red de rutas RNAV inter-Regional revisada.
A 1.9	Develop proposal for amendment to the CAR/SAM Air Navigation Plan Desarrollar propuesta de enmienda al Plan de Navegación Aérea CAR/SAM	2012	NACC and SAM Regional Offices / Oficinas Regionales NACC y SAM	Valid/Válida	Proposal for amendment to the CAR/SAM Air Navigation Plan / Propuesta de enmienda al Plan de Navegación Aérea CAR/SAM
A 1.10	Publish new Version of the CAR/SAM Inter-regional ATS Routes Network Publicar la nueva versión de la Red de Rutas ATS Inter-regional CAR/SAM	2012	States/Territories Estados/Territorios	Valid/Válida	Publication in AIP new RNAV routes/ Publicación en AIP de nuevas rutas RNAV

PROGRAMME/**PROGRAMME/PROGRAMA:****PROJECT/PROYECTO:**

PBN

A2. PBN SUPPORTING AIR NAVIGATION SYSTEMS / SISTEMAS DE NAVEGACION AEREA EN APOYO A LA PBN REGION SAM

PROJECT COORDINATOR/**COORDINADOR DEL PROYECTO:**

No.	Tarea/Task	Inicio Fin / Start End	Responsable / Responsible	Estado/Status	Deliverable/Entregable
1	2	3	4	5	6
A 2.1	<p>Feasibility of regional application, technical aspects, operational benefits, associated costs, for an SBAS (WAAS/SACSA) implementation. Implications for airborne equipment (factory delivered and retrofits) and other relevant aspects.</p> <p>Factibilidad de la aplicación regional, los aspectos técnicos, los beneficios operacionales, los costos asociados, de la implantación del SBAS (WAAS / SACCSA). Así como las implicaciones para los equipos de a bordo (nuevas o actualización de aviónicas) y otros aspectos pertinentes</p>	2008-2012	<p>ICAO / OACI</p> <p>Support TCB projects:</p> <p>SBAS type WAAS (RLA/00/009)</p> <p>SBAS SACCSA (RLA/03/902)</p>	Valid /Válida	<p>Feasibility study on the regional application, technical aspects, operational benefits, associated cost, for an SBAS (WAAS/SACSA) implementation. Implications for the on board equipment (factory delivered and retrofits) and other relevant aspects/</p> <p>Estudio sobre la factibilidad de la aplicación regional, los aspectos técnicos, los beneficios operacionales, los costos asociados, la implantación del SBAS (WAAS / SACCSA). Así como las implicancias para los equipos de a bordo (nuevas o actualización de aviónicas) y otros aspectos pertinentes.</p> <p>Estudio SBAS tipo WAAS concluido The SBAS type WAAS cmpleted</p> <p>El estudio tipo SBAS SACCSA en progreso. The study for an SBAS SACCSA in progress</p>
A 2.2	<p>Provide practical guidance for the implementation of GBAS systems</p> <p>Desarrollar guía práctica para la implementación del sistema GBAS</p>	2008-2011	<p>A2 Project/Proyecto A2 (with States with GBAS programs in progress/ / con Estados con programas GBAS en curso)</p> <p>(Brasil, Chile)</p>	Valid/Válida	<p>Guide on the practical guidance for the implementation of GBAS Systems/</p> <p>Guía práctica para implementación de sistemas GBAS</p>

No.	Tarea/Task	Inicio Fin / Start End	Responsable / Responsible	Estado/Status	Deliverable/Entregable
1	2	3	4	5	6
A 2.3	Review and update the regional conventional navaids infrastructure Table FASID-AIP and ICAO List 1 and List 2 Revisar y actualizar la Tabla FASID-AIP (preparada para el GNSS TF4) de infraestructura regional actual de ayudas para la navegación convencionales	2011	States/ Territories/ ICAO Estados/ Territorios/ OACI	Valid/Valida	Revised and updated regional conventional navaids infrastructure CNS Table 3 FASID . and List 1 ad 2 Tabla CNS 3: revisada y actualizada con infraestructura regional actual de ayudas convencionales para la navegación y la Lista 1 y 2 de la OACI
A 2.4	Analyse the DME/DME and GNSS infrastructure and coverage supporting PBN implementation Analizar la infraestructura y cobertura DME / DME y GNSS requerida para dar soporte a la implantación de la PBN	2011-2012	A2 Project/Proyecto A2 Proyecto RLA/06/901	Valid/Válida	analysis of the DME/ DME and GNSS infrastructure supporting PBN implementation análisis de la infraestructura DME / DME y GNSS requerida para apoyar la implementación de la PBN
A 2.5	Development of guidance on use of and available tools required for assessment of GNSS performance and service prediction. Desarrollo de orientación sobre el uso y disponibilidad de herramientas de previsión / validación de prestaciones del GNSS	2011	A2 Project/Proyecto A2 ICAO coordinates States/ Territories/ National and International Organizations inputs La OACI coordinara los aportes con los Estados/Territorios/o rganizaciones nacionales e internacionales	Valid/Válida	Guidance on use of and available tools required for assessment of GNSS performance and service prediction. Orientación sobre el uso y disponibilidad de herramientas de previsión / validación de prestaciones del GNSS