



International Civil Aviation Organization

South American Regional Office

Assistance for the Implementation of a Regional ATM System, taking into account  
the ATM operational concept and the corresponding CNS technological support

**Eighth Workshop/Meeting of the SAM Implementation Group**

**(SAM/IG/8) – Regional RLA/06/901 Project**

Lima, Peru, 10-14 October 2011

SAM/IG/8- WP/21

19/9/11

**Agenda Item 6:           Assessment of the operational requirements to determine the  
implementation of improvements in communication, navigation and  
surveillance (CNS) capabilities for en-route and terminal area operations**

**ACTIVITIES TO BE CONSIDERED IN THE SITUATIONAL AWARENESS ACTION PLAN  
PROPOSED FOR THE SAM REGION**

(Presented by the Coordinator of the Situational Awareness Project)

SUMMARY	
The purpose of this working paper is to present the participants with the Situational Awareness Action Plan proposed for the SAM Region.	
<b>References:</b> <ul style="list-style-type: none"><li>• CNS/ATM SG1: Project C2 of the CNS/ATM Group: ATM Situational Awareness Improvements</li><li>• Regional Unified Oversight Strategy for the CAR/SAM Regions</li><li>• Performance-Based Implementation Plan of the South American Region</li><li>• Final Report of the SAMIG/7 meeting</li></ul>	
<b>ICAO strategic objectives:</b>	<i>A – Safety C- Environmental protection and sustainable development of air transport</i>

**1. Introduction**

1.1 The First Meeting of the CNS/ATM Subgroup (CNS/ATM/SG/1), held in Lima – Peru from 15 to 19 March 2010, decided to adopt a project management approach to the work, instead of using working groups, in order to ensure better coordination of ATM and CNS matters and to develop CAR/SAM performance-based planning, with a view to implementing the global ATM system.

1.2 The CNS/ATM Subgroup is organized into a series of four programmes, identified as follows:

- a) PBN;
- b) ATFM;
- c) ATM automation and situational awareness; and
- d) Ground-ground and ground-air communications infrastructure.

1.3 The ATM Automation and Situational Awareness Infrastructure Programme encompassed three projects, which were:

- C1: Automation
- C2: Improvements in ATM Situational Awareness
- C3: Implementation of the new ICAO Flight Plan model

1.4 The ACG/8 Meeting decided that the work being done by the GREPECAS AERMET, AGA/AOP, AIM and CNS/ATM Subgroups and their respective Task Forces should be converted into programmes and projects.

1.5 The GREPECAS/16 Meeting noted that the CNS/ATM Subgroup was already using a programme and project management approach and, further, that the other Subgroups should base their approach on the work of the SNS Subgroup and that each region should conduct projects of this kind.

1.6 The Programme and Project Review Committee (PPRC) was created to give shape to the new structure of GREPECAS. That Committee will prepare the GREPECAS annual reports for approval by the Group, using this express procedure and these reports will then be submitted by the Secretariat to the ANC, for subsequent presentation to the Council, when appropriate.

1.7 The *Improvements in ATM Situational Awareness in the SAM Region* Project was created to replace the Improvement in Situational Awareness of CAR/SAM Infrastructure (C2) Project. At the SAMIG/7 Meeting, Mr. Paulo Vila, from Peru, was appointed project coordinator.

1.8 The SAMIG/7 Meeting agreed to present at this Meeting an Action Plan for the Project on Improvements in ATM Situational Awareness in the SAM Region. This working paper sets out that Action Plan.

## **2. Analysis**

2.1 Figure 1 illustrates the new organizational structure of GREPECAS, which emphasizes its programmes and projects. The CAR/SAM Programme and Project Coordination body was created to handle matters concerning the two regions.

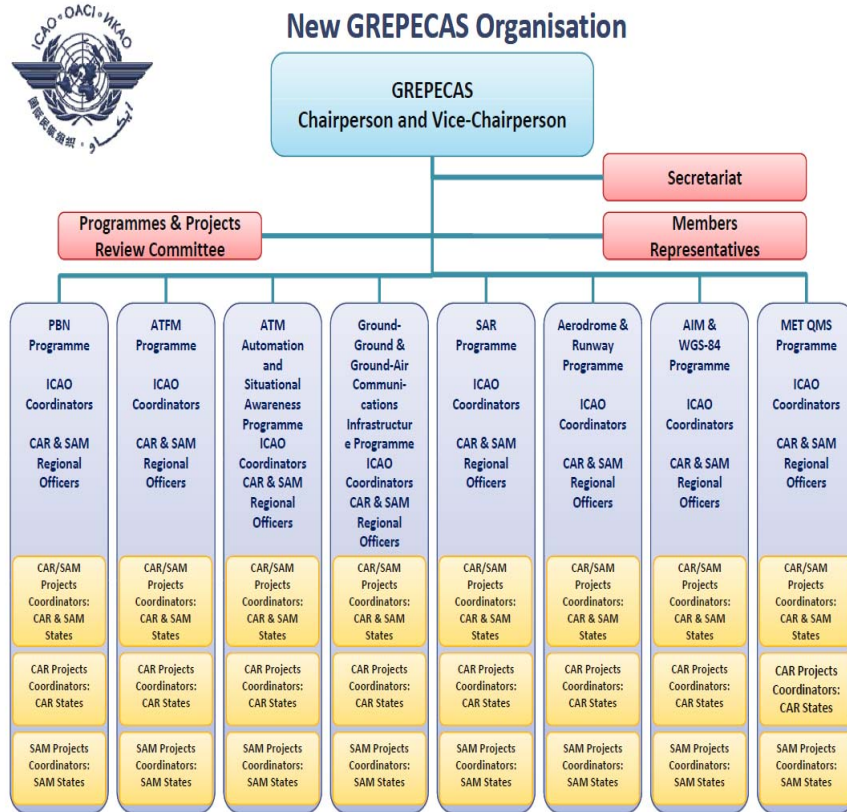


Figure 1: GREPECAS Composition

2.2 Using this structure, the new plans were prepared, which include tasks involving the SAM Region only, as described in the body of this working paper.

### 2.3 Project Documents

2.3.1.9 The following documents comprise the *Improvements in ATM Situational Awareness in the SAM Region* Project:

- Working Programme;
- Project Description (PD); and
- Project File;

2.3.2 For reference purposes, the deliverables requested from the previous Project C: Improvement in ATM Situational Awareness are described in the Table in **Appendix A**.

2.3.3 Most of the tasks of the previous project continue to be valid and have therefore been included as tasks for the new project.

2.3.4 As a result of the analysis, the deliverables to the *Improvements in ATM Situational Awareness in the SAM Region* Project are listed in the Project Description document in **Appendix B**.

2.3.5 The Project Description document summarizes what is needed to accomplish the Project objectives and lists the deliverables resulting from the efforts of several specialists.

2.3.6 As a part of this planning, the following are considered to be deliverables of the action plan on ATM situational awareness: the preparation of an implementation strategy for surveillance systems for the SAM Region, based on the surveillance strategy for the CAR/SAM Regions and the Performance-Based Air Navigation systems Implementation Plan for the SAM Region (PBIP); and guidelines for operational ADS B implementation and data-sharing (initial steps toward operational ADS B implementation), taking into account the Aeronautical Surveillance Manual, Doc 9924, and ICAO Circular 311.

2.3.7 The Project file, presented as **Appendix C**, sets out the initial planning for the principal Project activities, which will make it possible to manage the different Project variables, such as: scope, time, resources, quality, human resources and others. It should be noted that specialists have not yet been assigned to carry out the various Project development activities.

### 3. **Actions suggested**

3.1 The Meeting is invited to:

- a) Take note of the information presented;
- b) Review the proposed activities for the *Improvements in ATM Situational Awareness in the SAM Region* Project that are described in Appendixes B and C to this Working Paper.
- c) Analyze the deliverables from the Project activities described in Appendix B.
- d) Recommend Project support actions that are considered to be relevant.

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## APPENDIX A / APPENDICE A

PROGRAMME/PROGRAMA: AUTOMATION AND ATM SITUATIONAL AWARENESS / AUTOMATIZACION Y COMPRENSION SITUACIONAL ATM


PROJECT/PROYECTO: C2. IMPROVE ATM SITUATIONAL AWARENESS / MEJORA A LA COMPRENSION SITUACIONAL ATM

PROJECT COORDINATOR/  
COORDINADOR DEL PROYECTO: Veronica Ramdath

No.	Tarea/Task	Inicio Fin / Start End	Responsable / Responsable	Estado/Status	Deliverable/Entregable
1	2	3	4	5	6
C 2.1	Identify parties concerned Identificación de las partes interesadas	2009	GREPECAS	Completed/Finalizada	Identification of parties concerned Identificación de las partes interesadas
C 2.2	Evaluation of surveillance infrastructure and Identification of Surveillance system improvements to support continental en-route and terminal Airspace in CAR/SAM Regions, airspace classification, PBN and the ATFM  Evaluación de la infraestructura de vigilancia e identificación de mejoras a los sistemas de vigilancia para apoyar los espacios aéreos enruta y terminal en las regiones CAR/SAM, la clasificación del espacio aéreo, la PBN y el ATFM	2009-2012		Valid/Válida	
C 2.3	Develop situational awareness training programmes guidelines for pilots and controllers and technical/maintenance personnel.  Desarrollar programa de instrucción sobre comprensión de la situación para pilotos y controladores	2008-2012	States/ Territories/ Int. organizations	Valid/Válida	

No.	Tarea/Task	Inicio Fin / Start End	Responsable / Responsible	Estado/Status	Deliverable/Entregable
1	2	3	4	5	6
C 2.4	<p>Monitor the implementation of ATM surveillance systems for situational traffic information and associated procedures</p> <p>Monitorear la implantación de sistemas de vigilancia ATM para la información de la situación del tránsito y procedimientos asociados</p>	2010-2015		Valid/Válida	
C 2.5	<p>Monitor the implementation of ground and air electronic warnings, as needed</p> <ul style="list-style-type: none"> <li>• Conflict prediction</li> <li>• Terrain proximity</li> <li>• MSAW</li> <li>• DATW</li> <li>• Surveillance system for surface movement</li> </ul> <p>Monitorear la implantación de avisos terrestres y aéreos electrónicos, según sea necesario</p> <ul style="list-style-type: none"> <li>• predicción de conflictos</li> <li>• proximidad en el terreno</li> <li>• MSAW</li> <li>• DAIW</li> <li>• Sistema de vigilancia para el movimiento en la superficie</li> </ul>	2008/2014		Valid/Válida	
C 2.6	<p>Elaboración de un plan regional para la implantación del ADS- C y ADS B</p> <p>Elaboration of a Regional Plan for the implementation of ADS –C and ADS B</p>	2008/2014		Valid/Válida	
C 2.8	<p>Monitor the regional activities to optimize the use of radio frequency environment</p> <p>Monitorear las actividades para optimizar el uso del entorno de radio frecuencia</p>	2009/2011		Valid /Válido	

## APPENDIX B

	PROJECT DESCRIPTION (PD)		PD N°	
			Date: 11	Page: 1/3
ATM Automation and Situational Awareness Programme	Project Title Improvements in ATM Situational Awareness in the SAM Region.		Starting date: 10/10/2011 Ending date:	
<b>Project Objective</b>  Conduct studies for implementing applications that will help increase Situational Awareness in the South American Region.				
<b>Project Scope</b>  Studies that will allow for the implementation of several different applications, such as common traffic visualization, common visualization of meteorological conditions and communications in general: <ul style="list-style-type: none"><li>• Analysis of the existing surveillance infrastructure and identification of the improvements needed to support en-route and terminal airspace, airspace classification, PBN and ATFM.</li><li>• Ground and air electronic warnings, as needed, for: conflict prediction, ground proximity, MSAW, DAIW, and surface movement surveillance systems.</li><li>• Implementation of ADS-B, ADS-C and/or MLAT surveillance systems in selected airspace.</li><li>• Minimum common electronic information and databases needed to support decision-making and warning systems for an interoperable situational awareness among centralized ATFM units.</li><li>• Implementation of flight plan data processing systems (new FPL format) and tools for communication among ACCs.</li><li>• Implementation of air-ground communication systems through datalinks in selected airspace.</li><li>• Implementation of advanced automation support tools to contribute to the sharing of aeronautical information.</li></ul>				
<b>Project Strategy</b>  All of the tasks will be performed by experts designated by SAM States and organizations that are members of the Project, <i>Improvements in ATM situational awareness in the SAM Region. CAR/SAM ATN Architecture</i> , under the direction of the Project Coordinator. Communications between Project members and between the Project Coordinator and the Program Coordinator will be carried out via teleconferences and the Internet.  Once the studies have been completed, the results will be sent to the ICAO Program Coordinator in the form of a consolidated final document for analysis, review and approval.				

**Project Justification**

The First Meeting of the GREPECAS Communications, Navigation and Surveillance / Air Traffic Management Subgroup (CNS/ATM/SG/1), held in Lima, Peru from 15 to 19 March 2010, approved the use of methodology based on project implementation for carrying out CNS/ATM activities, instead of a Task Force activity approach.

Improving situational awareness has been identified as a major aid to ATM by helping to increase operational safety and making aircraft flights more efficient.

The Seventh Meeting of the SAM Implementation Group (SAMIG/7) reviewed the activities of the *Improvements in ATM Situational Awareness in the SAM Region* Project and considered appointing a Project Coordinator for the SAM Region.

Close links are needed with other programmes and their respective projects, in order to be able to gather information about the operational requirements needed for the cited applications and their tentative implementation dates.

**Project Coordinator**

Paulo Vila Millones (Peru)

**Interrelated projects**

The following projects were defined at the First Meeting of the Communications, Navigation and Surveillance Subgroup / Air Traffic Management (CNS/ATM/SG/1) as being related to the project objective of this PD:

- Air Navigation Systems in Support of PBN Implementation;
- Automation (Systems Interconnection);
- ATFM
- Implementation of the new ICAO Flight Plan Format;
- ATN Ground-Ground and Ground-Air Applications.

<b>Project Deliverables</b>	<b>Responsible</b>	<b>Planned Date</b>
Project Description Document (DP)	Project Coordinator	October 2011
Review of the Regional Surveillance Strategy for the Implementation of systems to support improvements in situational awareness.	Paulo Vila- Peru	February 2012
Guidelines for improvements in ground and air electronic warning systems.	TBD	March 2012
Guidance manual for ADS-B operational implementation and data sharing.	TBD	March 2012
Guidance manual to support ATFM Implementation.	TBD	March 2012
Guidance manual for AIDC use in order to avoid coordination errors.	TBD	June 2012
Guidance manual for preparing SIGMET in graphic form.	TBD	June 2012

**Necessary Resources**

Team of specialists: to be appointed.



# APENDICE C

SAM/IG/8-WP/21 NE/21

ID	Nombre de tarea	Start	Finish	Responsable de la tarea	Resource Names	2nd Quar	3rd Quar	4th Quar	1st Quart	2nd Quar	3rd Quar
1	MEJORA A LA COMPRESION SITUACIONAL	Mon 25/07/11	Fri 15/06/12		Plan Sudamericano de Implantación basado en performance, Proyecto C del CNS/ATM/SG, Estrategia Regional Unificada de Vigilancia Regiones CAR/SAM.						
2	1. Evaluación de la infraestructura de vigilancia e identificación de mejoras a los sistemas de vigilancia										
3	1.1 Entregable: Guía de Implantación de la estrategia regional para la implantación del sistema de vigilancia.	Mon 17/10/11	Tue 31/01/12	Paulo Vila							
4	Reunir información relacionada a la estrategia regional para la implantación del sistema de vigilancia (Estaciones de vigilancia y sus coberturas, requerimientos ATM)	Mon 17/10/11	Fri 16/12/11								
5	Entrega de propuesta de borrador	Mon 19/12/11	Fri 13/01/12								
6	Supervisión o revisiones del plan borrador	Mon 16/01/12	Fri 20/01/12								
7	Entregable documento final de la estrategia	Mon 23/01/12	Tue 31/01/12								
8	2. Monitorear la implantación de avisos / alarmas electrónicas terrestres y aéreas			TBD							
9	2.1 Entregable: Lineamientos para mejoras en alarmas electrónicas terrestres y aéreas	Tue 01/11/11	Fri 16/03/12								
10	Recolectar requisitos de información a ser solicitada	Tue 01/11/11	Fri 30/12/11								
11	Recolección de información relacionada por parte de la OACI	Tue 01/11/11	Fri 30/12/11								
12	Entrega de propuesta de borrador	Mon 02/01/12	Tue 31/01/12								
13	Supervisión o revisiones del plan borrador	Wed 01/02/12	Fri 17/02/12								
14	Ajustes finales al documento	Mon 20/02/12	Wed 29/02/12								
15	Entregable documento final de los lineamientos	Thu 01/03/12	Fri 16/03/12								
16	3. Elaboración de un plan regional para la implantacion del ADS-C y ADS-B			TBD							

Proyecto: mejora conciencia situa Fecha: Mon 10/10/11	Tarea		Hito externo		Informe de resumen manual	
	División		Tarea inactiva		Resumen manual	
	Hito		Hito inactivo		Sólo el comienzo	
	Resumen		Resumen inactivo		Sólo fin	
	Resumen del proyecto		Tarea manual		Fecha límite	
	Tareas externas		Sólo duración		Progreso	

# APENDICE C

SAM/IG/8-WP/21 NE/21


















ID	Nombre de tarea	Start	Finish	Responsable de la tarea	Resource Names	2nd Quar	3rd Quar	4th Quar	1st Quar	2nd Quar	3rd Quar
17	<b>Entregable: Guía de directrices para la implementación operacional del ADS-B e intercambio de datos.</b>	Tue 01/11/11	Fri 16/03/12								
18	Recolección de información para la elaboración de directrices para la implantación y operación del ADS-B y ADS-C.	Tue 01/11/11	Fri 30/12/11								
19	Apoyo en el suministro de información referente a las iniciativas existentes.	Tue 01/11/11	Fri 30/12/11								
20	Entrega de propuesta de borrador	Mon 02/01/12	Tue 31/01/12								
21	Supervisión o revisiones del plan borrador	Wed 01/02/12	Fri 17/02/12								
22	Ajustes finales al documento	Mon 20/02/12	Wed 29/02/12								
23	Entregable documento final de la Guía	Thu 01/03/12	Fri 16/03/12								
24	<b>4. Apoyo al grupo ATFM</b>			TBD							
25	<b>Guía de orientación en apoyo a la implantacion ATFM</b>	Tue 01/11/11	Fri 16/03/12								
26	Analizar las herramientas de apoyo para los requerimientos del grupo ATFM (ETMS, Herramientas de vigilancia para identificar límites del sector de espacio aéreo, A-SMGCS : Project B CNS/ATM/SG2)	Tue 01/11/11	Fri 30/12/11								
27	Recolección de información para la elaboración de directrices para la implantación y operación del ADS-B y ADS-C.	Tue 01/11/11	Fri 30/12/11								
28	Entrega de propuesta de borrador	Mon 02/01/12	Tue 31/01/12								
29	Supervisión o revisiones del plan borrador	Wed 01/02/12	Fri 17/02/12								
30	Ajustes finales al documento	Mon 20/02/12	Wed 29/02/12								
31	Entregable documento final de la Guía	Thu 01/03/12	Fri 16/03/12								
32	<b>5. Uso del AIDC con la finalidad de corregir errores de coordinación</b>			TBD							
33	<b>5.1.Guía de orientación para el uso del AIDC con la finalidad de reducir errores de coordinación.</b>	Mon 06/02/12	Fri 15/06/12								
34	Analizar las diversas ventajas que ofrece el AIDC para las coordinaciones entre ACC's	Mon 06/02/12	Fri 06/04/12								
35	Entrega de propuesta de borrador	Mon 09/04/12	Mon 30/04/12								
36	Supervisión o revisiones del plan borrador	Tue 01/05/12	Fri 18/05/12								

Proyecto: mejora conciencia situa Fecha: Mon 10/10/11	Tarea		Hito externo		Informe de resumen manual	
	División		Tarea inactiva		Resumen manual	
	Hito		Hito inactivo		Sólo el comienzo	
	Resumen		Resumen inactivo		Sólo fin	
	Resumen del proyecto		Tarea manual		Fecha límite	
	Tareas externas		Sólo duración		Progreso	

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SAM/IG/8-WP/21 NE/21

ID	Nombre de tarea	Start	Finish	Responsable de la tarea	Resource Names	2nd Quar	3rd Quar	4th Quar	1st Quart	2nd Quar	3rd Quar
37	Ajustes finales al documento	Mon 21/05/12	Thu 31/05/12								
38	Entregable documento final de la Guía	Fri 01/06/12	Fri 15/06/12								
39	6. Disponibilidad del SIGMET en formato gráfico	Mon 06/02/12	Fri 15/06/12	TBD							
40	6.1. Guía de orientación para elaborar SIGMET en formato gráfico.	Mon 06/02/12	Fri 15/06/12								
41	Analizar las diversas ventajas que ofrece el uso del SIGMET gráfico	Mon 06/02/12	Fri 06/04/12								
42	Entrega de propuesta de borrador	Mon 09/04/12	Mon 30/04/12								
43	Supervisión o revisiones del plan borrador	Tue 01/05/12	Fri 18/05/12								
44	Ajustes finales al documento	Mon 21/05/12	Thu 31/05/12								
45	Entregable documento final de la Guía	Fri 01/06/12	Fri 15/06/12								

Proyecto: mejora conciencia situa Fecha: Mon 10/10/11	Tarea		Hito externo		Informe de resumen manual	
	División		Tarea inactiva		Resumen manual	
	Hito		Hito inactivo		Sólo el comienzo	
	Resumen		Resumen inactivo		Sólo fin	
	Resumen del proyecto		Tarea manual		Fecha límite	
	Tareas externas		Sólo duración		Progreso	