INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THE SEVENTEENTH MEETING OF THE CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP (GREPECAS/17)

(Cochabamba, Bolivia (Plurinational State of), 21 – 25 July 2014)

FINAL REPORT

Prepared by the Secretariat and the Chairman of GREPECAS July 2014

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HISTORY OF THE MEETING

ii.1 Place and Duration of the Meeting

Upon the kind invitation of the Plurinational State of Bolivia, the Seventeenth CAR/SAM Regional Planning and Implementation Group Meeting (GREPECAS/17) was held in Cochabamba, Bolivia, from 21 to 25 July 2014, on the premises of the National Institute of Civil Aviation (*Instituto Nacional de Aviación Civil* - INAC).

ii.2 Opening Ceremony and Other Matters

Mr. Franklin Hoyer, Regional Director of the ICAO South American (SAM) Regional Office and Secretary of GREPECAS, expressed his sincere appreciation to the authorities of the Plurinational State of Bolivia for hosting the meeting. Mr. Hoyer also presented a plaque to the Executive Director of the Directorate General of Civil Aviation of the Plurinational State of Bolivia, Divisional General Luis Coimbra Busch, in recognition for his commitment to the development of civil aviation on the occasion of the inauguration of the new premises of the National Institute of Civil Aviation (*Instituto Nacional de Aviación Civil* - INAC). Mrs. Loretta Martin, Regional Director of the ICAO North American, Central America and Caribbean (NACC) Office and Mr. Norman Araújo de Medeiros (Brazil), President of GREPECAS, were also at the head table.

Divisional General Luis Coimbra Busch, Executive Director of the Directorate General of Civil Aviation, addressed the meeting, stressing the need for close inter-regional cooperation with a view to achieving a more harmonized air navigation system. Mr. Vladimir Sánchez, Minister of Public Works, Services and Housing, welcomed the delegates, wishing them success in the achievement of the meeting goals. A ceremony followed in which the Plurinational State of Bolivia handed over the Air Traffic Control Simulator was formally handed over to the Bolivian National Institute of Civil Aviation (*Instituto Nacional de Navegación Aérea* - INAC). Subsequently, a walk-through visit to the aforementioned simulator was performed.

Divisional General Luis Coimbra Busch, Executive Director of the Directorate General of Civil Aviation, addressed farewell words to Mrs. Loretta Martin, Regional Director of the ICAO NACC Office, who will be retiring from ICAO next November. In this tribute, he described Mrs. Martin's life achievements in civil aviation and she was presented with a plaque for her accomplishments and contributions to civil aviation throughout these years in the Organization.

Likewise, the Meeting acknowledged the participation of INEO, ARINC and SITA as meeting sponsors, for presenting their activities in the field of air navigation systems, and exhibiting their products.

The Meeting was honoured with the presence of Mr. Farid Zizi, President of the ICAO Air Navigation Commission, who attended the GREPECAS Meeting at his own initiative and provided important contributions related to topics of the Commission.

ii.3 Organization, Officers and Secretariat

Mr. Normando Araújo de Medeiros (Brazil), Chairman of GREPECAS, presided over the meeting. Mr. Franklin Hoyer, Regional Director, ICAO South American Regional Office, acted as Secretary

of the meeting and was assisted by the following officers from the ICAO NACC and SAM Regional Offices:

Loretta Martin	Regional Director, ICAO NACC Regional Office
Oscar Quesada	Deputy Regional Director, ICAO SAM Regional Office
Jorge Fernández	Deputy Regional Director, ICAO NACC Regional Office
Onofrio Smarrelli	Regional Officer, Communications, Navigation and Surveillance ICAO SAM, Regional Office
Víctor Hernández	Regional Officer, Air Traffic Management/Search and Rescue, ICAO NACC Regional Office
Jaime Calderón	Regional Officer AGA/AOP, ICAO NACC Regional Office
Julio Siu	Regional Officer, Communications, Navigation and Surveillance, ICAO NACC Regional Office
Raúl Martínez	Regional Officer AIM ICAO NACC, Regional Office
Lía Ricalde	Regional Officer Aerodromes and Ground Aids, ICAO SAM Regional Office
Julio de Souza Pereira	Regional Officer, Air Traffic Management and Search and Rescue ICAO SAM Regional Office
Jorge Armoa	Regional Office, Aeronautical Information Management; Aeronautical Meteorology, ICAO SAM Regional Office
Roberto Arca	Regional Officer, Air Traffic Management and Search and Rescue; Aeronautical Information Management, ICAO SAM Regional Office

ii.4 **Working Languages**

The working languages of the meeting and its documentation were English and Spanish.

ii.5 **Agenda**

The agenda was adopted as follows:

Agenda Item 1: Follow-up on the results of the GREPECAS/16 and PPRC/1 and PPRC/2 meetings

Under this agenda item, the Meeting will review the results of the GREPECAS 16 meeting (Punta Cana, Dominican Republic, 18 March to 1 April 2011) and the Programmes and Projects Coordination Committee meetings PPRC/1 (Mexico City, Mexico, 25-27 April 2012) and PPRC/2 (Lima, Peru, 16-18 July 2013) and the status of the conclusions and decisions formulated by those meetings. This analysis will include a review of the action taken by the ICAO Air Navigation Commission (ANC) regarding the GREPECAS/16 report and of the status of implementation of its conclusions and decisions, as analysed by the PPRC/1 meeting.

Agenda Item 2: Review of coordination activities between GREPECAS and RASG-PA

2.1 RASG-PA regional activities
2.2 Coordination activities between GREPECAS and RASG-PA

Under this agenda item, the Meeting will take note of the activities conducted by the RASG-PA since the GREPECAS/16 meeting. It will also review the activities required for enhancing air

navigation safety, as well as coordination activities between GREPECAS and RASG-PA for avoiding duplication of resources.

Agenda Item 3: Air navigation activities at global, intra-regional, and inter-regional levels

3.1 Global air navigation activities
3.2 Intra-regional air navigation activities
3.3 Inter-regional air navigation activities

The Meeting will analyse the results of the 38th Session of the ICAO Assembly regarding air navigation aspects, the development of the new electronic air navigation plan (e-ANP), the development of the regional performance dashboards, and the annual report of the global air navigation plan. Likewise, the Meeting will review the regional performance-based air navigation plans aligned with the CAR and SAM Aviation System Block Upgrades (ASBU) for their approval. It will also take note of the main activities concerning air navigation carried out in CAR/SAM States, territories, and international organisations. Finally, it will review the conduction of inter-regional activities concerning air navigation matters between the CAR and SAM Regions and between the CAR and SAM Regions and other ICAO Regions.

Agenda Item 4: Regional air navigation planning and implementation performance framework: Review of programmes and projects

4.1 PBN Programme Projects
4.2 ATFM Programme Projects
4.3 ATM Automation and Situational Awareness Programme Projects
4.4 Ground-Ground and Ground-Air Communication Infrastructure Programme Projects
4.5 AGA Programme Projects
4.6 AIM Programme Projects
4.7 Aeronautical MET Programme Projects

The CAR and SAM coordinators of the PBN, ATFM, ATM automation and situational awareness, ground-ground and ground-air communication infrastructure, AGA, AIM, and MET programmes will present the status of implementation of the respective projects, based on the established metrics and goals, the alignment of project activities with the Aviation System Block Upgrades (ASBU) Block 0 modules approved by the Twelfth Air Navigation Conference, and the plans for the completion of pending activities.

Agenda Item 5: Air navigation deficiencies in the CAR/SAM Regions

5.1 Follow-up on application of the new uniform methodology for the identification, assessment, and reporting of air navigation deficiencies
5.2 Status of air navigation deficiencies in the CAR/SAM Regions

The Meeting will review the improvements made to the revised methodology for processing "U" deficiencies, which involves Hazard Identification and Risk Assessment (HIRA), and GANDD management, as contemplated by the CRPP/2 meeting in Conclusion 2/1, Improvements to the Revised Air Navigation Deficiencies Methodology and the GREPECAS Air Navigation Deficiencies Database (GANDD). It will also review the status of air navigation deficiencies in the CAR and SAM Regions.

Agenda Item 6: Matters related to the organisation of GREPECAS

Under this agenda item, the Meeting will review the terms of reference and work programme of GREPECAS.

Agenda Item 7: Other business

Under this agenda item, the Meeting will analyse any other matter that cannot be addressed under the previous agenda items.

ii.6 **Attendance**

The GREPECAS/17 Meeting was attended by 103 participants from 17 States/Territories of the CAR/SAM Regions and Observers from 8 International Organizations. A list of participants is shown in page iii-1.

ii.7 **Conclusions and Decisions**

GREPECAS records its action in the form of conclusions and decisions as follows:

Conclusions deal with matters, which in accordance with the Group's terms of reference require direct attention of States/Territories and/or International Organizations, or on which further action will be initiated by ICAO in accordance with established procedures.

Decisions deal with matters of concern only to the GREPECAS organization.

ii.8 **List of Conclusions**

ii.9 **List of Decisions**

iii. **List of Participants**

LIST OF PARTICIPANTS

Argentina

Ignacio Oliva Whiteley
Silvia Ana González
Alfredo Fabián Iacono
Ricardo Daniel Sykes
José María Dayub
Víctor Marcelo de Virgilio
Gustavo José Caputo

Bolivia

Luis Coímbra Busch
Javier García Soruco
Johnny Luis Arnez Moreno
Reynaldo Cusi Mita
Miguel Angel Castillo Ochoa
René Dulfredo Delgado Rua
Jaime Yuri Alvarez Miranda
César Carlos Böhrt Urquizo
Daniel Bustamante Leyton
Roberto Gironás
Francisco Santiago
Raúl Velasco Ramos
Daniel Navajas Orellana
Fernando Azuga H.
Marco Barrios
Jorge Rojas
Manuel Talamás
Carlos Calle
Fernando Fuentes Daza
Walter Jurado Palenque
Jhonny Humberto Cassas Coca
Jaime Villar Rojas
Carlos M. Molina Campbell
Javier Barrios Arce
Fernando Lara Ríos
Mauricio Rojas Quiroz

Brazil / Brasil

Normando Araujo de Medeiros
Gustavo Camargo de Oliveira
Luiz Roberto Barbosa Medeiros
Alessander de Andrade Santoro
Rodrigo Henriques Godinho
Luis Antonio dos Santos
Delfim Ossamu Miyamaro
Eno Siewerdt
Luiz Antonio de Freitas Castro

Chile

Duncan Silva
Alfonso E. de la Vega

Colombia

Juan Carlos Rocha Botero
Nibia L. Morales G.

Cuba

Mirta Crespo Frasquieri
Orlando Nevot González
José Valdés Macías

Curacao / Curazao

Jacques Lasten
Michael Celestijn

Dominican Republic / República Dominicana

Francisco Bolívar León
Johann Estrada Pelletier
Betty Castaing
Julio Alexis Lewis Camarena

Guatemala

Silvia Jeaneth Herrera Meléndez

Haiti / Haití

Joseph Jacques Boursiquot

Honduras

Heriberto Sierra Pavón

Nicaragua

Ismarck A. Delgado Quiroz
Eleane J. Salguera Montes

Panama / Panamá

Henry Stec
Alberto De Icaza
Gilda Espinosa

Paraguay

Roque Díaz Estigarribia
Jorge Szwako Montero
Liz Rocío Portillo Castellanos
José Luis Chávez Martínez
Carlos Roberto Salinas Rojas

Trinidad & Tobago / Trinidad y Tabago

Rohan Garib
Veronica Ramdath
Riaaz Mohammed

United States / Estados Unidos

Christopher Barks
Michael Polchert
Bonnie Ahumada
Christopher Loring

Uruguay

Guillermo Gurbindo
Fernando de Medina
Luis A. Otheguy Prada

International Organizations

ARINC

Manuel Gongora

CANSO

Javier Vanegas

COCESNA

Juan Carlos Trabanino

IATA

Carlos Cirilo
Margaret Jenny

IFALPA

Diana Martinez

INEO

Fabien Viagas
Clement Chevallier

JEPPESEN

Demetrius Zuidema
Luis Navarro

SITA

Adriana Matos

ICAO Secretariat/Secretaría de la OACI

Loretta Martin
Franklin Hoyer
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Raúl Martínez
Lia Ricalde
Julio C. de Souza Pereira
Jorge Armoa Cañete
Roberto Arca

iv List of Documentation

All meeting documentation is available at the following web link:

http://www.lima.icao.int, Meetings, GREPECAS, 2011

LIST OF WORKING PAPERS

Number	Agenda Item	Title	Prepared and presented by
WP/01	--	Tentative Agenda, schedule and proposed working methods ***(Revised)***	Secretariat
WP/02	1	Follow-up on the results of the GREPECAS/16 and PPRC/1 and PPRC/2 meetings and status of implementation of Conclusions and Decisions adopted.	Secretariat
WP/03	2.1	RASG-PA progress report	Secretariat
WP/04		CANCELLED	
WP/05	3.1	Results of the 38th. Session of the ICAO Assembly regarding air navigation aspects and their impact on regional air navigation planning and implementation activities	Secretariat
WP/06	3.3	New methodology for the analysis and assessment of Large Height Deviations in the CAR/SAM Region ***(Revised)***	Rapporteur of the Scrutiny Working Group (GTE)
WP/07	3.3	Activities by CARSAMMA (***Revised***)	Secretariat
WP/08	3.2	NAM/CAR Regional performance-based air navigation plan (RPBANIP) and the NAM/CAR air navigation priorities	Secretariat
WP/09	3.2	SAM Performance-Based Air Navigation Implementation Plan (SAM PBIP), as aligned with the Aviation System Block Upgrades (ASBU) methodology	Secretariat
WP/10	3.3	Inter-regional activities between the CAR and SAM Regions and between CAR and SAM and other ICAO Regions	Secretariat
WP/11	4.1	Follow-up to the activities under Project A1 (PBN implementation) and Project A2 (Air navigation system in support of PBN)	Secretariat
WP/12	4.2	Follow-up to the activities under Project B1 (improve demand-capacity balancing) and Project B2 (flexible use of airspace**)** **(*Revised)***	Secretariat
WP/13	4.3	Follow-up on Automation and ATM Situational Awareness Project(s) Activities	Secretariat
WP/14	4.4	Follow-up to the Implementation of Activities under the Projects of the CAR/SAM Ground-Ground and Ground-Air Communication Infrastructure Programme	Secretariat

Number	Agenda Item	Title	Prepared and presented by
WP/15	4.5	FOLLOW-UP OF AERODROME PROJECT ACTIVITIES	Secretariat
WP/16	4.6	AIM Programme Projects ***(Revised***)	Secretariat
WP/17	4.7	MET PROGRAMME PROJECTS – CAR REGION	Secretariat
WP/18	5.1	Follow-up on application of the new uniform methodology for the identification, assessment and reporting of air navigation deficiencies ***(Revised)***	Secretariat
WP/19	5.2	"A", "B" and "U" deficiencies in the CAR/SAM Regions (***Revised)***	Secretariat
WP/20	6	Review of the GREPECAS Procedural Handbook	Secretariat
WP/21	3.1	Follow-up on the development of regional performance dashboards	Secretariat
WP/22	3.3	Follow-up on CNS Interregional Implementation Activities	Secretariat
WP/23	3.3	Follow-up on GREPECAS Scrutiny Working Group activities - Safety assessment in CAR/SAM RVSM airspace	Rapporteur of the Scrutiny Working Group (GTE)
WP/24	4.4	MEVA III network implementation	Secretariat
WP/25	4.4	Follow-up to the Implementation of REDDIG II	Secretariat
WP/26	3.1	REMOTELY PILOTED AIRCRAFT SYSTEMS (RPAS)	CANSO
WP/27	3.3	Consolidation of Inter-Regional AIDC Interface Control Document	USA
WP/28	3.3	Collaborative activities in the CAR/SAM Region	USA
WP/29	3.2	Air Navigation Plan for Colombia - ANP-COL	Colombia
WP/30	5.2	Status of Air Navigation deficiencies in Paraguay	Paraguay
WP/31	3.2	U.S. implementation of the Aviation System Block Upgrades (ASBU) Block 0 Modules	USA
WP/32	4	Considerations on obstacle limitation surfaces at aerodromes located in mountainous (Andean and Sub-Andean) Areas	Bolivia
WP/33	4.7	MET Programme Projects – SAM Region	Secretariat
WP/34	5.2	Reporting form on Air Navigation Deficiencies in ATM/CNS in the CAR/SAM Region	IATA
WP/35	7	FPL errors	IATA
WP/36	7	Destination alternate aerodrome filling exception	IATA

LIST OF INFORMATION PAPERS

Number	Agenda Item	Title	Prepared and presented by
IP/01	--	General information ***(Revised)***	Secretariat
IP/02	--	List of working papers and information papers	Secretariat
IP/03	4.3	Crossing FIR boundaries Project	CANSO
IP/04	3.1	Planning and Implementation Regional Group (PIRGs) activities in other Regions	Secretariat
IP/05	3.1	Information on the revision of the Regional Supplementary Procedures (Doc 7030)	Secretariat
IP/06	3.1	New Regional Air Navigation Plan (ANP) template and procedure for amendment	Secretariat
NI/07	7	Simulador tránsito aéreo INAC-Bolivia (Cochabamba) ***(Spanish only)***	Bolivia
NI/08	4	Automatización para "vigilancia del espacio aéreo en el Estado Plurinacional de Bolivia" ***(Spanish only)***	Bolivia
NI/09	7	Equipo de verificación en vuelo de ayudas a la navegación aérea ***(Spanish only)***	Bolivia
NI/10	4.4	Proceso de implantación del AIDC en la FIR Asunción ***(Spanish only)***	Paraguay
NI/11	4.1	Implementación del concepto de navegación basada en performance (PBN) en el diseño del espacio aéreo del aérea de control terminal – TMA Asunción ***(Spanish only)***	Paraguay
IP/12	3.2	Management of National ATM Implementation Plan	Brazil
IP/13	4.1	GBAS (Ground Based Augmentation System) implementation in Brazil	Brazil
IP/14	4.1	Progress of the RLA/03/902 Project – "Transition to GNSS/SBAS in the CAR/SAM Regions – SACCSA – Phase III	SACCSA
IP/15	3.3	NACC/SAM Seamless ATM Task Force (***English only***)	Brazil, United States, ALTA, IATA, IFALPA, RTCA
IP/16	2.2	Strategic and Proactive Coordination between GREPECAS and RASG-PA for ASBU Implementation (***English only***)	USA

Agenda Item 1: Follow-up on the results of the GREPECAS/16 and PPRC/1 and PPRC/2 meetings

Under this Agenda Item, the following working paper was discussed:

- WP/02 (Secretariat)

1 **Status of Implementation of the Conclusions and Decisions formulated by the GREPECAS/16, PPRC/1 and PPRC/2 Meetings**

1.1 The Meeting took note of both meetings of the Programmes and Projects Review Committee (PPRC), which were held in 2011 and 2012.

1.2 The Meeting noted that during the second meeting of the GREPECAS Programmes and Projects Review Committee, participant States analyzed the implementation status of GREPECAS conclusions and decisions that had been considered valid by the PPRC/1 Meeting, as well as the implementation actions taken by CAR/SAM States/Territories/International Organizations and/or the ICAO Secretariat and considered that all pending GREPECAS conclusions and decisions had been finalized. The current status of conclusions and decisions is shown in **Appendix A** to this part of the report.

1.3 The Meeting recalled that PPRC/2 also reviewed draft conclusions and decisions formulated by the PPRC/1 Meeting, which had been circulated to States through the GREPECAS fast-track mechanism, and concluded that same had been finalized or rendered invalid by time, developments or action taken by the PPRC/2 Meeting. The results of this analysis are shown in **Appendix B** to this part of the report.

1.4 Likewise, upon reviewing this item, the Meeting took note of the need to review the GREPECAS numbering system for the conclusions and decisions of both the Group and the PPRC so as to account for its new structure and operation.

1.5 In this sense, the Secretariat submitted the following proposal on the numbering of the conclusions and decisions of the Group to the Meeting:

a) the traditional numbering system for GREPECAS meetings remains the same;

b) draft conclusions/decisions of the PPRC meetings held between GREPECAS meetings, which are approved through the fast-track mechanism:

i. become GREPECAS conclusions/decisions;

ii. keep the numbering assigned by the corresponding PPRC and, if necessary, are submitted to the Air Navigation Commission; and

c) the GREPECAS meeting held after the PPRC meetings will examine the status of the conclusions/decisions and will assign the numbering that corresponds to that meeting to all conclusions and decisions that are still valid.

1.6 While reviewing the draft conclusions and decisions formulated during the PPRC/2 Meeting and their current implementation status, the Meeting concluded that valid conclusions and decisions be formally adopted as GREPECAS conclusions and decisions as shown in **Appendix C** to this part of the report.

APPENDIX A

FOLLOW-UP ON OUTSTANDING CONCLUSIONS AND DECISIONS FORMULATED BY PREVIOUS GREPECAS MEETINGS CONSIDERED AS VALID BY GREPECAS/16 – MEETING – ACTION PLAN

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C12/67	**QUALITY ASSURANCE SYSTEMS FOR MET SERVICES IN THE CAR/SAM REGIONS**	That CAR/SAM States/ Territories/International Organisations make utmost efforts to establish quality assurance systems for meteorological services provided in support of international air navigation in the CAR/SAM Regions.	All SAM States have implemented the MET QMS system; 5 of these States have certified the MET/QMS system and the remaining States are in the process of certification. In the CAR Region, 5 States and 1 Territory have implemented the MET/QMS system and 11 States are in an advanced state of MET/QMS implementation. Since practically all States have started the establishment of quality assurance systems for meteorological services, the conclusion is considered as finalised.	States/Territories	Implementation of MET QMS	N/A*	**Completed**
C 13/23	**DEVELOPMENT OF A GUIDE FOR THE DRAFTING OF EMERGENCY PLANS FOR AERODROMES THAT MIGHT BE AFFECTED BY VOLCANIC ASH IN THE CAR/SAM REGIONS**	That the AERMET Subgroup, in coordination with the Secretariat, develops a guide for the drafting of emergency plans for aerodromes that might be affected by volcanic ash in the CAR/SAM Regions.	The guide was drafted, and is available in Spanish and English.	ICAO	Guide for the drafting of emergency plans for aerodromes that might be affected by volcanic ash in the CAR/SAM Regions.	N/A	**Completed**

1 ICAO established the following Strategic Objectives for the 2011-2013 period:
A. ***Safety*** *— Enhance global civil aviation safety*
B. ***Security*** *— Enhance global civil aviation security*
C. ***Environmental protection and sustainable development of air transport*** *— Foster harmonized and economically viable development of international civil aviation that does not unduly harming the environment.*

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C 13/41	**NEED TO FURTHER AIS/MAP AUTOMATED SYSTEMS**	That, considering the need for CAR/SAM States/Territories/ International Organizations to develop automated systems for the exchange of information/data and the resulting application of the aeronautical information management (AIM) concept, GREPECAS consider: a) automation of AIS services in the CAR/SAM Regions as an urgent matter necessary to make progress in line with developments related to the CNS/ATM elements that are already being implemented in these Regions; and b) urging ICAO to define the global data model for the exchange of aeronautical information as soon as possible.	Regarding item b), it is expected that ICAO define the exchange model. The data exchange model has not been defined yet. ICAO Headquarters has not yet provided a specific date. States and international organizations have made significant progress with the implementation of automated systems in the production and distribution of the IAIP. Costa Rica, Dominican Republic, Trinidad and Tobago (for States in the PIARCO FIR), Cuba, Mexico, and Nicaragua, as well as COCESNA (for Central America) are in the forefront in technologies associated to the global AIM. ICAO has taken note of the requirement for SARPs for the exchange of aeronautical information. SARPs are expected for 2014, so the conclusion is considered as completed.	ICAO	Guidelines and/or SARPs for the exchange model	N/A	**Completed**
C 15/4	**D-VOLMET AERONAUTICAL DATA LINK REQUIREMENTS IN THE CAR/SAM REGIONS**	That the ICAO NACC and SAM Offices amend Part VII Vol. I - ATS of the ANP to reflect the requirement for D-VOLMET aeronautical data link services in the CAR/SAM Regions.	The AERMET Subgroup, upon analysing D-VOLMET implementation in the CAR/SAM Regions, proposes an amendment to ANP Volume I Basic, Part VII ATS. The amendment will be included in the new ANP publication. The process for the amendment of the ANP, Volume I is under way. It is expected that it will be completed by the first quarter of 2014 and, accordingly, the conclusion is considered as completed.	ICAO	Amendment to Part VII-ATS, ANP Vol. I	N/A	**Completed**

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C 15/35	**IMPLEMENTATION OF THE NEW ICAO FLIGHT PLAN MODEL**	Considering that States should take measures to implement the new ICAO flight plan model pursuant to Amendment No. 1 to the 15th Edition of the PANS-ATM (Doc 4444), and in order to establish a regional strategy to facilitate global implementation of this amendment, that: a) based on the guidance material to be prepared by ICAO, CAR/SAM States/Territories and International Organizations take the necessary measures to prepare for the transition to the new flight plan model; and b) the Subgroup establish a contributory body to develop a regional strategy for the transition to the new flight plan model in the CAR/SAM Regions and the provisions associated with ATS messages.	On 15 November 2012, CAR/SAM States and Territories successfully implemented Amendment 1 to PANS/ATM (Doc 4444), 15th Edition. The transition to the new ICAO flight plan model was successfully conducted on 15 November 2012.	a) States and International Organizations b) CNS /ATM /SG	Regional strategy for the implementation of a new ICAO flight plan model.	Recognizing that many of the regions are progressing at a different pace for migration to the new ICAO flight plan, the Commission reiterated the need for global coordination by ICAO HQ so as to ensure smooth transition at regional and national levels.	**Completed** Nov 2012
C 16/10 **C**	**MONITORING OF SIGMETs RECEIVED IN THE BRASILIA INTERNATIONAL OPMET DATABANK**	That in the controls of OPMET information carried out by the Brasilia International Databank: a) priority is given to the analysis of most common errors in the headings of SIGMETs; b) the results be sent to the ICAO SAM Office; and c) ICAO Lima and Mexico Offices submit the monitoring results to the corresponding States for them to take the relevant action to correct the deficiencies detected.	On-going activity taking into account items a), b), and c). The respective project coordinator has carried out this activity, the last being on 4-7 June 2013. The results were very positive, given the response of the States in providing timely information to the Brasilia and Washington databanks. On-going activity by the Brasilia OPMET databank. Regional Offices monitor the performance of the activity and send the results to the States. Accordingly, it is felt that the conclusion has been completed.	Brasilia international OPMET databank	SIGMET monitoring	Not analysed by the ANC	**Completed**

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C 16/13 **C**	**SIGMET TESTS**	That in order to keep a constant feedback and efficiency in the issuance of volcanic ash SIGMETs starting 2010, the States, in coordination with the corresponding VAACs, carry out the SIGMET WV test during the month of September. The test should have a duration of 48 hours.	Included in the tasks of the IAVW Project of the MET Programme. The States have taken note of the conduction of annual SIGMET WV tests in the month of September. Consequently, the conclusion is considered as completed. The Secretariat will monitor the performance of this activity.	CAR/SAM States/ Territories/ international organizations	SIGMET WV tests	Not analysed by the ANC	**Completed**
16/16 **C**	**INSTALLATION OF AMHS USER TERMINALS IN METEOROLOGICAL UNITS WITH INTERNATIONAL OPMET REQUIREMENTS**	That the corresponding States, when implementing the new AMHS systems in substitution of the current AFTN system, take into consideration the installation of AMHS user terminals in the MET units of the States that have international OPMET requirements, in order to increase the availability of OPMET information and to comply with GREPECAS Conclusion 6/33.	The States, upon implementing the new AMHS, are considering the installation of AMHS terminals in meteorological units with international OPMET requirements. In the CAR Region, many States are in the process of implementing this new AMHS system. The States have taken note of the need to install AMHS terminals in MET stations with international requirements, and many have already installed them. Consequently, the conclusion is considered as completed.	CAR/SAM States/Territories/international organisations	Installation of AMHS user terminals in meteorological units with international OPMET requirements	Not analysed by the ANC	**Completed**
16/17 **C**	**AMENDMENT TO CAR/SAM BASIC ANP AND FASID, PART VI – MET**	That: a) Part VI – MET of the CAR/SAM Basic ANP and FASID Tables MET 1A and MET 2A are amended as shown in Appendix D to WP/08 of this meeting; and b) Table MET 2B of the CAR/SAM Facilities and Services Implementation Document (FASID): i. be eliminated from the CAR/SAM FASID; and ii. be included as an appendix to the CAR/SAM Guide for OPMET exchange.	Amendment to the Basic ANP circulated on 6 March 2012. NACC information pending for amendment to the ANP FASID.	Secretariat ICAO NACC and SAM Offices	Amendment to CAR/SAM Basic ANP and FASID, Part VI-MET	Not analysed by the ANC	**Completed** Jun 2012
C 16/19 **C**	**ATM/MET SEMINAR/WORKSHOP**	That ICAO, in order to develop a list of possible MET requirements in support of ATM, conduct, in coordination with WMO, an ATM/MET seminar/workshop for the CAR/SAM Regions.	It was held on 29-31 October 2012 at the NACC Regional Office.	ICAO Lima and Mexico Regional Offices	ICAO/WMO seminar/workshop	Took note and urged the Secretary General to request the WMO its support for organising the seminar/workshop	**Completed** Oct 2012

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C 16/24 **A**	**HARMONIZATION OF TAXIWAY DESIGNATION**	That ICAO consider the development and provision of guidelines on the harmonization of taxiway designation in order to reduce operator confusion and to minimize runway incursions.	The AGA section has developed guidelines on the harmonization of taxiway designation, which are currently under review. The ICAO Aerodrome Panel has included the task in its work programme and it is expected that the task will be completed in 2014. Consequently, the conclusion is considered as completed.	ICAO HQ/AGA	Guidelines on the harmonization of taxiway designation.	Supported the development of guidelines by ICAO and urged the Secretariat to include this matter in the work programme of the Aerodrome Panel	**Completed**
C 16/31 **C**	**AVAILABILITY OF DOCUMENTATION IN SPANISH**	That the need to give priority, to the extent possible, to translating into Spanish the texts that are available only in English and that are of crucial importance for complying with ICAO SARPs, be proposed to ICAO with a view to achieving the AIS-AIM transition.	The proposal was submitted. The Quality Manual, Training Manual, AIS Manual, Charting Manual, Guidelines in the Use of the Public Internet for Aeronautical Applications, and eTOD Manual were translated. ICAO HQ is drafting Doc 9839 AIM-QMS, and is preparing the AIM TRAIN manual, the PANS AIM, and other documentation indicated in this conclusion for translation into Spanish. Since HQ is in the process of translating the documentation and its completion is foreseen for 2014, the conclusion is considered as completed.	ICAO HQ IIM/AIM	Spanish text of guidance material for AIS-AIM transition.	Note taken	**Completed**
C 16/32 **C**	**GENERAL GUIDANCE FOR THE IMPLEMENTATION OF A GIS SYSTEM IN AIM**	GREPECAS approves, as an element of vital importance in support of ICAO SARPs, the application of the general guides for the implementation of a GIS system in AIM, towards the transition from AIS to AIM in the States, Territories, and international organisations of the CAR/SAM Regions	The guides are in the process of being implemented in CAR States, and have been adopted by SAM States. In the SAM Region, all States have implemented a GIS system.	CAR/SAM States/ Territories/ international organisations	Apply the general guides for the implementation of a GIS system in AIM.	Note taken	**Completed**

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C 16/36 **C**	**COLLECTION OF INFORMATION ON EXISTING AND FUTURE AVIONICS IN THE CAR/SAM REGIONS**	Taking into account the importance of having information on avionics already installed and to be installed on user aircraft, for purposes of planning and cost/benefit analyses, it is urged that: a) States/Territories and international organisations collect information on avionics already installed and to be installed in non-IATA domestic fleets and other general aviation users, suggesting the adoption of a format similar to that of the IATA survey form (Appendix D to this part of the Report), the results to be sent to the respective ICAO Regional Office by December 2010; b) IATA include the aforementioned information in the IATA database, informing the ICAO CAR/SAM Regional Offices about the response to this request; and c) the information collected to date in the SAM and CAR Regions be included in the mentioned database, as well as any information that can be provided by the avionics manufacturers.	Difficulties in data collection in CAR/SAM States continue. This conclusion should be examined together with IATA to confirm/update the agreements for the collection of this information. The collection of information using the IATA form has concluded since the latter is no longer being used. Information on avionics is being collected in each Region as part of the activities envisaged for the implementation of PBN, data link, and new surveillance systems. Therefore, the conclusion is no longer valid and is considered as completed.	CAR/SAM States / Territories/ international organisations IATA	Collection of information on existing and future avionics Inclusion of avionics information in the IATA survey form.	Not analysed by the ANC	**Completed**

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C 16/38 **C**	**IMPROVEMENTS TO THE ACTIVITIES RELATED TO ADS-B TRIALS**	That States/Territories/international organisations that are carrying out ADS-B trials are urged to: a) continue with the data collection and analysis, in accordance with GREPECAS guidelines (GREPECAS/15 report, Appendix Q); b) seek the exchange of data between States, particularly with regard to coverage superposition and analysis criteria; c) solve, with the respective airspace users, the duplicate or illegal 24-bit address cases identified, and inform in this respect to the ICAO Regional Offices; d) inform airspace users on any anomaly in the received ADS-B messages, in preparation for future ADS-B implementation; and e) duly inform the ICAO Regional Offices on trial results for their publication.	The NAM/CAR Ad-hoc Group and the SAM/IG are taking into account these improvements and considerations in ADS-B trials. On-going activity prior to the installation of an ADS B station. a) Several States are analysing ADS-B data. b) ADS-B data sharing will be carried out as part of the analysis. c) 24-bit address duplication is part of the data analysis. d) Continuous activity prior to the installation of an ADS-B station. The ad-hoc groups will inform ICAO on their activities. The States have taken note of the action required when conducting ADS-B trials. Therefore, the conclusion is considered as completed.	CAR/SAM States/ Territories/ international organisations	Improvement in activities related to ADS-B trials	Note taken	**Completed**
C 16/40 **+ associated** **C 16/41** **C**	**TRAINING FOR AERONAUTICAL PROFESSIONAL COMPETENCE**	That CAR/SAM States/Territories and international organisations take into consideration the list of short- and medium-term training requirements shown in Appendix D to the report of the CNS/ATM/SG/1 meeting, so that the CATCs, in coordination with civil aviation authorities of CAR/SAM States/Territories and international organisations, prepare aeronautical training programmes that contemplate regional air navigation and safety requirements.	Note has been taken and it has been included in work plans and discussions on training: It will be presented and discussed at the next meeting of training centres of the NAM/CAR Regions to be held during the first semester of 2012. In the CAR Region, this list has been submitted to the consideration of the States/ANSPs and training centres. SAM States have analysed and discussed this list at the meetings of Directors of civil aviation training centres (CATCs). In order to guide States on competence-based training, the Twelfth meeting of Directors of CATCs of the SAM Region (Lima, Peru, 3-5 December 2012) considered that the Mexico and Peru training centres should draft an agenda for a seminar/workshop on competence-based training to be held during the second semester of 2013.	CAR/SAM States/ Territories/ international organisations	Aeronautical training programmes that take into consideration regional requirements.	Note taken	**Completed**

Conc/Dec and Strategic Objective[1]	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up and Remarks	Responsibility	Deliverable	Action by the ANC	Status and Reporting/ Completion Date
C 16/43 **A**	**REVISED METHODOLOGY FOR THE IDENTIFICATION, ASSESSMENT AND REPORTING OF AIR NAVIGATION DEFICIENCIES**	That: a) ICAO consider the proposed revised methodology for the identification, assessment and reporting of air navigation deficiencies presented in Appendix A to this part of the report; and b) in the *interim*, GREPECAS adopt the revised methodology as a test-bed and notify the ANC of the results.	a) ICAO took note of the revised methodology for the identification, assessment and reporting of deficiencies and is waiting for the results of implementation tests. b) The methodology continues to be applied as a test bed. ICAO has taken note of the revised methodology, which has been incorporated into a test bed prior to its final adoption. Therefore, the conclusion is considered as completed.	ICAO HQ/ANB and GREPECAS Secretary	Proposed revised methodology for the identification, assessment and reporting of air navigation deficiencies	Commended the work by GREPECAS in proposing a revised methodology for the identification, assessment and reporting of air navigation deficiencies. Any decision on this matter must await the results of the trials. The Secretariat is called upon to ensure that any revised methodology for the identification, assessment and reporting of air navigation deficiencies is uniformly applied by all PIRGs and Regions, and to verify other proposals presented by other PIRGs.	**Completed**

* N/A: Not applicable

APPENDIX B

FOLLOW-UP ON VALID CONCLUSIONS/DECISIONS OF THE PPRC/1– ACTION PLAN

Conc/Dec and Strategic Objective(s)	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up	To be initiated by	Status	Deliverable	Completion Date
DRAFT CONCLUSION 1/1	**ACTIONS TO IMPROVE PROCESSING OF AIR NAVIGATION DEFICIENCIES**	That, with the aim of improving the processing of air navigation deficiencies, ICAO: a) conduct training activities on the HIRA process related to deficiencies and the mechanism for reporting to the Regional Offices, within the context of existing events, missions to States, State visits to ICAO Regional Offices, teleconferences, etc.; b) request States to report, by 30 June 2012, the difficulties they may be facing for the implementation of the HIRA process for "U" deficiencies; and c) urge States to test the centralized database on the ICAO iSTARS platform, following the guidance contained in PPRC/1-WP/16 and provide feedback to the ICAO Regional Office by 31 August 2012.	PPRC/2 WP/04 under Agenda Item 1.3 a) Teleconferences were carried out via web for some SAM States. In the CAR Region, a workshop on management of air navigation deficiencies and the use of the revised hazard identification and risk assessment methodology was held on 17 May 2013. b) Only one SAM State reported difficulties in HIRA implementation (Argentina) and none of the CAR States sent comments in this regard. The activity has been suspended until further notice.	a), b) and c) ICAO Regional Offices	a), b) and c) completed	Improvement in the processing of air navigation deficiencies	31 August 2012

Conc/Dec and Strategic Objective(s)	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up	To be initiated by	Status	Deliverable	Completion Date
			c) The ICAO NACC and SAM Regional Offices informed through letters SA050 of 29 January 2013 and EMX1141 of 27 December 2012 that the migration of the GANDD database to the new ANDEF database of the iSTARS platform was suspended until further notice and thus the GANDD should continue to be used. The activity has been suspended until further notice.				
DRAFT DECISION 1/2	**GREPECAS PROCEDURAL HANDBOOK**	The 2012 Sixth Edition, version 1.1, of the GREPECAS Procedural Handbook is approved.		PPRC/1 meeting	Completed	GREPECAS Procedural Handbook updated	April 2012
DRAFT DECISION 1/3	**PROGRAMMES AND PROJECT REVIEW COMMITTEE (PPRC) TERMS OF REFERENCE AND WORK PROGRAMME**	The revised PPRC Terms of Reference and Work Programme presented in Appendix B to this part of the report are approved.		PPRC/1 meeting	Completed	Terms of reference and work programme of the Programmes and Projects Review Committee (PPRC) updated	April 2012
DRAFT DECISION 1/4	**GREPECAS ANNUAL REPORT CONTENT**	The content of the GREPECAS Annual Report presented in Appendix C to this part of the report is approved.	PPRC/2 WP/16 under Agenda Item 4.2	PPRC/1 meeting	Superseded. The content of the GREPECAS Annual Report is no longer valid (refer to WP/16).	Content of the GREPECAS Annual Report	April 2012

GREPECAS CONCLUSIONS/DECISIONS EMANATING FROM PPRC/2

GREPECAS 17 Conclusions/Decisions	Title of Conclusion/ Decision	Text of Conclusion/Decision	Justification
GREPECAS Conclusion 17/1	Regional and global air navigation reporting	That States: a) support the plan to produce an online Regional Performance Dashboard in March 2014 and the annual Global Air Navigation Report to be published in April 2014; b) provide the required information to the ICAO Regional Offices to demonstrate operational improvements by February 2014 and periodically thereafter; and c) establish, if not yet done so, a performance measurement strategy that comprises data compilation, processing, storage and reporting for the regional performance metrics identified for air navigation systems.	The Meeting approved Draft Conclusion 2/3, which established the follow-up on ICAO plans and show the implementation progress of the Air Navigation Plan priorities, applying a performance measurement strategy.
GREPECAS Conclusion 17/2	Follow-up on AN-Conf/12 recommendations by States and international organisations	That States and international organisations, on the basis of the analysis to Appendix A* to this part of the report, take follow-up action as appropriate on the applicable recommendations of AN-Conf/12. • Appendix A to Agenda Item 2 of PPRC/2	The Meeting approved PPRC Conclusion 2/4 on the follow-up to the AN-Conf/12 recommendations by the States.
Decision 17/3	Regional priorities and targets for air navigation	That GREPECAS: a) establish, as per Recommendations 6/1 and 6/12 of the Twelfth Air Navigation Conference (AN-Conf/12), regional priorities and targets for air navigation, consistent with the Global Air Navigation Plan (GANP) and Aviation System Block Upgrades (ASBU), by March 2014, if possible, and by May 2014 at the latest; and b) as per GREPECAS Decision 16/3, the regional priorities and targets for air navigation will be coordinated with RASG-PA to ensure consistency of action and avoid overlap.	The Meeting approved PPRC draft Decision 2/2, which resulted from the Global PIRG and RASG coordination meeting held in Montreal, Canada, on 19 March 2013, based on the need to establish regional air navigation priorities and objectives aligned with the new version of the Global Air Navigation Plan (GANP) and the Aviation System Block Upgrades (ASBU), within the framework of, and pursuant to, the results of Recommendations 6/1 and 6/12 of the Twelfth Air Navigation Conference (AN-Conf/12) and as coordinated with RASG-PA, in order to ensure consistent action and avoid duplication.

GREPECAS 17 Conclusions/Decisions	Title of Conclusion/ Decision	Text of Conclusion/Decision	Justification
Decision 17/4	Revised Terms of Reference and Work Programme of the Programmes and Projects Review Committee (PPRC)	That the proposed revised terms of reference and work programme of the PPRC shown in Appendix A to this part of the report are approved.	The Meeting approved PPRC draft Decision 2/7 revising the PPRC terms of reference and work programme, and considered the inclusion of two additional tasks to its work programme.
Decision 17/ 5	GREPECAS Annual Report	That GREPECAS submit an annual report to the ICAO Air Navigation Bureau (ANB) consisting of the GREPECAS meeting report in years when a GREPECAS meeting is held and a PPRC meeting report in other years, which includes a Table of Conclusions and Decisions in the format presented in Appendix B.	The Meeting approved PPRC draft Decision 2/8 for the presentation of annual reports to the Air Navigation Bureau.

Agenda Item 2 Review of coordination activities between GREPECAS and RASG-PA

2.1 RASG-PA Regional Activities

Under this agenda item, the following working paper was discussed:

- WP/03 (Secretariat)

2.1.1 WP/03 contained a report on Regional Aviation Safety Group — Pan America (RASG-PA) activities, implementation of the ICAO Global Aviation Safety Plan (GASP) and Annex 19 through various initiatives and aviation projects to enhance aviation safety by mitigating risks and thus reducing the fatal aviation accident rate in the Pan American Region.

2.1.2 The Meeting took note of the results of the fourth edition of the RASG-PA Annual Safety Report (ASR), which identified the three main risk areas in the Pan American Region: Runway Excursion (RE), Controlled Flight Into Terrain (CFIT), and Loss of Control In-flight (LOC-I). Recently, Mid-Air Collision (MAC) was added to the list.

2.1.3 It also noted that the main challenges to improving safety levels in the Pan American Region included:

- Low levels of Effective Implementation (EI) of the 8 Critical Elements (CEs), according to the results of the Universal Safety Oversight Audit Programme (USOAP) and ICAO Coordinated Validation Missions (ICVMs)
- States have insufficient human resources and budgets
- Delayed implementation of the ICAO State Safety Programme (SSP) and Safety Management Systems (SMS)

2.1.4 The role of RASG-PA, as safety focal point in the Pan American Region, is to ensure harmonization and coordination of efforts in order to reduce aviation safety risks in collaboration with all aviation stakeholders. Continuous improvement of aviation safety in the region will depend on the commitment, participation and contributions of its members. The working paper invited the Meeting to support and participate in RASG-PA activities and in the forthcoming Fifth Pan American Aviation Safety Summit and Seventh Regional Aviation Safety Group – Pan America Annual Plenary Meeting (RASG-PA/7), which will be held in Willemstad, Curacao, from 9 to 12 September 2014.

2.1.5 Likewise, it was indicated that RASG-PA actions are solely data-based and coordination of activities with GREPECAS prevents duplication of efforts and allows resource optimization.

2.2 Coordination activities between GREPECAS and RASG-PA

- IP/16, (United States)

2.2.1 United States noted the importance of continued cooperation in the NACC and SAM Regions, which can set a positive example for other ICAO regions.

Agenda Item 3 Air navigation activities at global, intra-regional, and inter-regional levels

3.1 Global Air Navigation activities

Under this agenda item, the following working papers and information papers were discussed:

- WP/05 (Secretariat), WP/21 (Secretariat), WP/26 (CANSO), IP/04 (Secretariat), IP/05 (Secretariat), IP/06 (Secretariat)

Results of the 38th Session of the ICAO Assembly (A38) Concerning Air Navigation Aspects and Their Impact on Regional Air Navigation Planning and Implementation Activities

3.1.1 The Meeting took note of the results of the 38th Session of the ICAO Assembly concerning air navigation aspects, particularly Resolutions A38-2, A38-6, A38-8, A38-11, and A38-12, and analyzed their impact on air navigation planning and implementation activities in the CAR/SAM Regions. Accordingly, the Meeting agreed that CAR/SAM States:

a) should amend their national air navigation plans, taking into account the new Global Air Navigation Plan (GANP-fourth edition) and the regional performance-based implementation plans, aligned with the NAM/CAR and SAM ASBUs;

b) should provide the respective ICAO NACC and SAM Regional Offices, no later than **15 September 2014**, the names and contact information (telephone, e-mail) of the focal points designated to coordinate with ICAO and the national bodies responsible for managing the radio frequency spectrum with a view to supporting the ICAO position at the ITU WRC-15;

c) should use ICAO standardized phraseology in all situations for which it has been specified and promote the use of the ICAO Aviation English Language Test Service (AELTS) to verify language proficiency testing instruments;

d) should proceed with publishing any significant differences in their Aeronautical Information Publication (AIPs) and use the Electronic Filing of Differences (EFOD) system to notify differences to ICAO; and

e) should take note of the criteria of the permanent declaration of Resolution A38-12 and take them into account in the planning, establishment, and operation of air navigation services.

3.1.2 In this regard, the Meeting agreed to formulate the following conclusion:

CONCLUSION 17/6 FOLLOW-UP ON THE IMPLEMENTATION OF A38 RESOLUTIONS REGARDING AIR NAVIGATION

That, pursuant to the resolutions of the 38th Assembly concerning air navigation matters, CAR/SAM States:

a) proceed to amend their national air navigation plans, taking into account the GANP and the regional performance-based implementation plans, aligned with the ASBUs;

b) provide the respective ICAO Regional Offices, no later than **15 September 2014**, with the names and contact information (telephone, e-mail) of the focal points designated to coordinate with ICAO and the national bodies responsible for managing the radio frequency spectrum,with a view to supporting the ICAO position at the ITU WRC-15;

c) use ICAO standardized phraseology in all situations for which it has been specified and make use of the ICAO Aviation English Language Test Service (AELT) to verify language proficiency testing instruments;

d) publish any significant differences in their Aeronautical Information Publication (AIP) and use the Electronic Filing of Differences (EFOD) system to notify differences to ICAO; and

e) note the criteria of the permanent declaration of Resolution A38-12 and take them into account in the planning, establishment, and operation of air navigation services.

Follow-up on the development of Regional Performance Dashboards

3.1.3 The Meeting was apprised of the results of the Global Coordination Meeting (GCM) of Regional Planning and Implementation Groups (PIRGs) and Regional Aviation Safety Groups (RASGs), held in Montreal, Canada, on 19 March 2013. The main objective was to exchange views on the readiness and ability of PIRGs and RASGs to set priorities and objectives in line with the new versions of the GANP and the GASP.

3.1.4 Likewise, the Meeting took note of the metrics or initial data set included in the global air navigation key priorities referred to in Resolution A38-2, and that on 5 May 2014, ICAO published the Regional Performance Dashboards (*http://www.icao.int/safety/Pages/Regional-Targets.aspx*) to measure progress with implementation of global objectives and priorities for each Region.

3.1.5 The Regional Performance Dashboards show the performance of regional objectives, initially containing graphics and maps with foreseen expansion of regional implementation priorities. For each of the selected regional objectives, the current (baseline) status and implementation plans for the 2014-2016 period will be shown based on the associated metrics. The currently posted dashboards contain a disclaimer since the existing information on air transport, air navigation and safety-related data and statistics are provided to ICAO by third parties. All third-party contents have been obtained from sources considered reliable. However, ICAO specifically gives no assurance and makes no representation as to the accuracy, integrity or timeliness of such information and assumes no responsibility for reliance on or use of such information. The initial dashboards are being improved with a view to harmonizing data sources and represent a starting point for measuring regional achievements.

3.1.6 In order to meet the Regional Performance Dashboard requirements, the CAR/SAM Regions have been working on the performance indicators and goals for both safety and air navigation during 2013-2014, resulting in regional commitments to indicators and goals contained in the *Bogota Declaration* for the SAM Region *and Port-of-Spain Declaration* for the NAM/CAR Regions.

3.1.7 *The Bogota Declaration* was drafted by the Thirteenth Air Navigation and Safety Directors Meeting held in Lima, Peru, on 21-22 October 2013, which selected 5 indicators for monitoring safety objectives, and 10 indicators for monitoring air navigation objectives. The *Bogota Declaration* was

approved at the Thirteenth Civil Aviation Authorities of the South American Region Meeting (RAAC/13) held in Bogotá, Colombia, on 4-6 December 2013. This Declaration is available at:

http://www.icao.int/SAM/Documents/RAAC13/RAAC13_BogotaDeclarationNewsAPX_v1.pdf

Appendix A to WP/21 contains the air navigation performance indicators, the parameters assigned to them, as well as the current status and goals to be achieved by December 2016.

3.1.8 The *Port-of-Spain Declaration* was proposed at the First CAR Region Safety and Air Navigation Directors Meeting (CAR/DCA/OPSAN/1) held at the ICAO NACC Regional Office in Mexico City, Mexico, 18-19 February 2014, and approved at the Fifth North American, Central American and Caribbean Directors of Civil Aviation Meeting (NACC/DCA/5), held in Port-of-Spain, Trinidad and Tobago, 28-30 April 2014. This Declaration is available at:

http://www.icao.int/NACC/Documents/Meetings/2014/NACCDCA5/POSDeclarationEN.pdf.

Appendix B to WP/21 contains the air navigation performance indicators, their assigned parameters, current status and short-term goals.

3.1.9 In order to monitor progress made with respect to CAR/SAM air navigation indicators and metrics, the PPRC/2 held in Lima, Peru, on 16-18 July 2013, agreed that the PPRC would be responsible for collection, monitoring and reporting progress on operational improvement implementation in the CAR/SAM Regions through the Regional Offices. To that end, it adopted Conclusion 2/3 – *Regional and Global Air Navigation Report*, requesting States to provide the ICAO Regional Offices with the necessary operational improvement information by February 2014 and periodically thereafter, and to establish a performance measurement strategy comprising data collection, processing, storage and reporting of air navigation performance metrics identified for the respective region. To this end, the Meeting agreed to approve the form submitted by the Secretariat on the indicators and goals established in the *Bogota* and *Port-of-Spain Declarations*, which is contained in **Appendix A** to this part of the report, which will be submitted to the ICAO Air Navigation Commission. Based on the above, the Meeting agreed to formulate the following conclusion:

CONCLUSION 17/7 APPROVAL OF THE FORMS TO FOLLOW-UP ON THE PROGRESS ON INDICATORS AND TARGETS FOR THE CAR/SAM REGIONS

That for GREPECAS to collect, monitor, and report progress on operational improvement implementation in the CAR/SAM Regions based on the indicators and targets established in the *Bogota and Port-of-Spain Declarations* and subsequently submit it to the ICAO Air Navigation Commission:

a) the form presented in Appendix A to this part of the report is approved; and

b) the ICAO NACC and SAM Regional Offices will implement this form in order to report progress for inclusion in the regional performance dashboards.

New electronic Regional Air Navigation Plan (eANP) Template and Amendment Procedure

3.1.10 The Meeting took note of the new template and amendment procedure of the electronic Regional Air Navigation Plan (eANP) shown in IP/06.

3.1.11 The Meeting was informed that the eANP data related to air navigation facilities and services can be classified as stable, dynamic or flexible. In this sense, it was agreed that the eANP would consist of three volumes:

a) Volume I should contain the stable elements of the Plan, the amendment of which requires approval by the Council.

b) Volume II should contain the dynamic elements of the Plan, the amendment of which does not require approval by the Council (approval is by regional agreement involving the relevant PIRG).

c) Volume III should contain the dynamic/flexible elements of the Plan providing implementation planning guidance for air navigation systems and their modernization, taking into consideration emerging programmes, such as the ASBUs, and the associated technology roadmaps described in the GANP.

3.1.12 The Meeting took note that a revised procedure for amendment of the eANP, using a web-based platform was being proposed, whereby the current procedure of amendment of the Basic ANP and the FASID, with some minor changes, would apply to the new Volumes I and II. The management and amendment of Parts 0 and I of Volume III would be carried out through the inter-regional coordination mechanism of the Secretariat and Part II would require approval under the responsibility of the relevant PIRG. The procedure of amendment of Volumes I, II and III is shown in Appendix A to IP/06.

3.1.13 The Meeting noted that, with the approval of the eANP template by the Council, the drafting/approval of the eANP would be consistent with the action plan shown in IP/06.

Information on the Revision of the Regional Supplementary Procedures (Doc 7030)

3.1.14 The Meeting took note of the progress made by the Secretariat for the implementation of Recommendation 6/11 — *Alignment of air navigation plans and regional supplementary procedures*, formulated by the *Twelfth Air Navigation Conference* (AN-Conf/12) (October 2012) with a view to aligning the application areas of the *Regional Supplementary Procedures* (SUPPs) (Doc 7030) with those of the Air Navigation Plan (ANPs) of the Regions, in order to simplify management procedures of regional performance dashboard by the PIRGs and support more efficient planning and implementation of the Aviation System Block Upgrades (ASBUs).

3.1.15 Likewise, the Meeting was informed that the AN-Conf/12, through Rec. 6/11 (see Appendix A to IP/05), and based on the information submitted in AN-Conf/12-WP/24 (see Appendix B to IP/05), agreed to align the application areas of the ANPs and the SUPPs that did not coincide. ICAO Headquarters, together with the relevant Regional Offices, started the process of implementation of Rec. 6/11 in April 2013, and an action plan has been implemented for the revision/approval/publication of Doc 7030, to take place between May 2014 and July 2015.

3.1.16 It should be noted that this revision of Doc 7030 will generate new application areas for the SUPPs, namely AFI, ASIA/PAC, CAR/SAM, EUR, MID, NAM, and NAT, which will replace the current application areas: AFI, CAR, EUR, MID/ASIA, NAM, NAT, PAC and SAM, thus harmonising the application areas of the SUPPs with those of the ANPs. The application areas of the SUPPS in the CAR and SAM Regions will be combined in a single application area: CAR/SAM. The MID/ASIA application area will be split into MID and ASIA responsibility areas, and the latter will be merged with

the PAC area to create the ASIA/PAC application area. The SUPPs for each application area do not change, except for some editorial adjustments due to the transfer to other areas/new application areas.

3.1.17 It is expected that once the Council approves this revision to Doc 7030, a new edition of Doc 7030 will be published next year (2015) and the PIRGs will have a chance to review the SUPPs applicable to their area of responsibility and determine if they require any additional amendment.

Activities of the Planning and Implementation Regional Groups (PIRGs) in Other Regions

3.1.18 The Secretariat informed about the activities of the PIRGs in other Regions, including the review of the corresponding PIRG meeting reports by the Air Navigation Commission (ANC).

3.1.19 Based on the review of the PIRG and RASG meeting reports by the ANC, the need was identified for the Secretariat at Headquarters to apply a coordination approach involving all regional groups and between the PIRGs and RASGs of the same region. IP/04 provides a detailed description of PIRG activities during 2013 and up to March 2014, highlighting the adoption of regional priorities, plans, and performance goals based on the ASBU, coordination between the PIRGs and RASGs, the results of the monitoring of Reduced Vertical Separation Minima (RVSM), implementation aspects related to PBN, GNSS, AIM/SWIM, AIDC, SAR agreements, analysis of air navigation deficiencies, amongst other issues.

3.1.20 The ANC recommended that, on a regular basis, PIRGs (and where appropriate, RASGs) provide information on the implementation status of ICAO Standards and Recommended Practices (SARPs), particularly of initiatives related to the ASBUs. Updated information would be useful for identifying the need for updating the GANP, the global aviation safety plans, and the air navigation work programme.

3.1.21 Finally, the Secretariat highlighted the sharing of lessons learned and best practices of the PIRGs and RASGs, as well as comments in this regard resulting from the review of meeting reports by the ANC, through the coordination mechanism of the Secretariat, which includes the presentation of a working paper at PIRG meetings supported by the ANB, at the annual training of regional officers at Headquarters, at the meeting of PIRG and RASG Chairpersons and Secretaries every two years, etc. and at the regular coordination by the ANB Implementation Section. Best practices are shown in IP/04.

3.1.22 CANSO provided information on their document published for raising awareness through examples, and to address other issues that ANSPs might need to consider when integrating RPAS (remotely-piloted aircraft systems) into Air Traffic Service (ATS) airspace. The document is available at: *http://www.canso.org/cms/showpage.aspx*.

3.1.23 The Secretariat stated that RPAS are a subset of Unmanned Aircraft Systems (UAS) and that ICAO was developing SARPs, PANS, and guidelines to support their safe operation within the aeronautical system.

3.2 Intra-regional Air Navigation activities

- WP/08 (Secretariat), WP/09 (Secretariat), WP/29 (Colombia), WP/31 (United States), IP/12 (Brazil)

Regional Performance-Based Air Navigation Plans

3.2.1 For the CAR Region, the Secretariat provided an overview of the formulation and updating of the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP), Version 3.1, which is aligned with the ICAO ASBU methodology. It highlighted that the RPBANIP serves as the basis for air navigation implementation activities in the NAM/CAR Regions, and reflected regional priorities and milestones.

3.2.2 The RPBANIP was updated, reviewed and analysed as a third edition by the NAM/CAR Air Navigation Implementation Working Group (ANI/WG) in July 2013, with the following changes, *inter alia*: a five-year plan; selected ASBU B0 modules; the corresponding added Air Navigation Report forms (ANRFs) and expansion of operational scenarios justifying the RPBANIP.

3.2.3 The Secretariat highlighted that NAM/CAR regional priorities were expressed in the RPBANIP as Regional Performance Objectives (RPOs) and that 15 ASBU B0 modules were adopted for the initial 5-year period. ASBU B0 modules ASEP, OFPL and WAKE will be included in future revisions of the RPBANIP, based on the maturity of the tasks and regional priorities.

3.2.4 The RPBANIP was reviewed against Resolution A38-2 - *ICAO global planning for safety and air navigation,* and by the CAR/DCA/OPSAN/1 and NACC/WG/4 meetings. It was approved by the Directors of North America, Central America and the Caribbean at their NACC/DCA/05 meeting through Conclusion 5/3 - *Approval of the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP), Version 3.1*.

3.2.5 Similarly, the Meeting took note that NACC/DCA/05 Meeting urged all States/Territories to update their national Air navigation plans, and formulated Conclusion 5/4 - *Update National Air Navigation Implementation Plans in Accordance with the RPBANIP, Version 3.1*. This version 3.1 is available at the following link*:* *http://www.icao.int/NACC/Pages/namcar-RPBANIP.aspx*, and air navigation goals for the NAM/CAR Regions are listed in the Appendix to WP/08.

3.2.6 For the SAM Region, the Meeting took note of the drafting of the *SAM Performance-Based Air Navigation Implementation Plan* (SAM PBIP) (Version 1.4) and its alignment with ICAO ASBU methodology.

3.2.7 Based on the above, and taking into account the upcoming drafting of the eANP, the Meeting considered that the RPBANIP and SAM PBIP planning and implementation elements should be included in the e-ANP, Volume III. Accordingly, it formulated the following conclusion:

CONCLUSION 17/8 INCLUSION OF REGIONAL PERFORMANCE-BASED IMPLEMENTATION PLANS IN THE NEW AIR NAVIGATION PLAN (eANP)

That, taking into account the individual regional performance-based implementation plans, the ICAO NACC and SAM Regional Offices include the corresponding sections of those plans in the new electronic CAR/SAM Air Navigation Plan (eANP), Volume III.

3.2.8 Finally, the Meeting highlighted the need for the States to support the Regional Offices in the identification and coordination of CAR/SAM inter-regional activities needed to comply with ICAO regional implementation plans, as established in Resolution A38-2.

National Performance-Based Air Navigation Plans

3.2.9 Colombia presented the Meeting with its experience in the formulation and updating of its National Air Navigation Plan, as a demonstration of its commitment to contribute to the sustainable growth of the global civil aviation system. The fourth edition of the GANP, including the ASBU approach, is reflected in the new version of the National Air Navigation Plan, since it confirms the long-term vision and applies the ASBU systemic approach to consolidate the short-term operational objectives. Colombia offers to the States its experience in the formulation and updating of the National Air Navigation Plan, and proposes that the Region should work together, wherever possible, in the formulation of common indicators and measurement methods to serve as a reference for the countries of the Region.

3.2.10 The Meeting acknowledged the leadership shown by Colombia through the incorporation of the ASBU approach into its Plan and also noted that in the Bogota and Port-of-Spain Declarations for the SAM and CAR Regions, respectively, regional indicators and metrics have been established and that such indictors will be reviewed between ICAO Assemblies, in accordance with that stated in Doc 9883. It was also recalled that WP/08 and WP/09, presented by the Secretariat, contain the indicators and metrics applicable to the CAR and SAM Regions.

3.2.11 The United States briefed the Meeting on the implementation status of ASBU modules in the United States, in support of the GANP, indicating that it has implemented all the modules in Block 0, based on the needs and requirements of its National Airspace System (NAS), whereby some modules and capabilities have been implemented throughout the NAS, while others have been implemented in selected sites.

3.2.12 Brazil informed on action taken under the SIRIUS Programme regarding the evolution of the national ATM system, and the management process established for implementation. Since the late 90s, specific plans have been developed to implement projects related to the use of new CNS/ATM functionalities. Based on the Global ATM Operational Concept (Doc 9854) and the third edition of the GANP(Doc 9750), DECEA has updated its ATM plans and produced a document entitled National ATM Operational Concept (DCA351-2), as well as the National Performance-Based ATM Implementation Plan (PCA 351-3), which was approved in 2012. The SIRIUS Programme website, *www.decea.gov.br/novo_sirius/*, contains general information on the programme and can be accessed through the link: *www.decea.gov.br*.

3.3 Inter-regional Air Navigation Activities

- WP/06 (GTE Rapporteur), WP/07 (CARSAMMA), WP/10 (Secretariat), WP/22 (Secretariat), WP/23 (GTE Rapporteur), WP/27 (United States), WP/28 (United States), IP/15 (Brazil, USA, IATA, ALTA, IFALPA, RTCA)

Inter-regional activities in the ATM and CNS Areas

3.3.1 Pursuant to Assembly Resolution A38-2: *ICAO global planning for safety and air navigation*, and taking into account that both the CAR and the SAM Regions have developed and approved their own regional air navigation plans in alignment with the ICAO ASBU methodology, which

reflect regional priorities that are also addressed in the national priorities, the Secretariat described the air navigation implementation mechanisms existing in each region through the Air Navigation Implementation Working Group (ANI/WG) in the CAR Region and the SAM Implementation Group (SAM/IG) in the SAM Region, details of which are provided in WP/22.

3.3.2 MEVA-REDDIG interconnection: The Meeting noted that studies for this interconnection/interoperability started early this century with a view to improving the efficacy, efficiency, quality, and availability of Aeronautical Fixed Service (AFS) voice and data communication circuits specified in the CAR/SAM Regional Air Navigation Plan, Volume II (FASID), and were completed in March 2010 with the interconnection of the MEVA II and REDDIG networks. Likewise, the Meeting was informed that taking into account the years of service of the MEVA II and REDDIG networks, both the MEVA II and the REDDIG administrations had started a process to modernize the networks, which included MEVA III/REDDIG II interconnection aspects.

3.3.3 In this sense, the Meeting concluded that in order to coordinate the final activities required for the implementation of the MEVA III - REDDIG II interconnection, revise the Memorandum of Understanding, and implement new services through the interconnection it would be advisable to hold a MEVA III-REDDIG II coordination meeting during the first semester of 2015.

3.3.4 Web-based RAIM availability prediction service: The Meeting noted that as part of the PBN implementation plans, the SAM Region had acquired a RAIM availability prediction service through Regional Project RLA/06/901, which would be available by mid-September 2014. It was also stated that this service could be extended to States of other regions that might be interested.

3.3.5 ATN implementation: ATN implementation and applications have been progressing in accordance with user performance and requirements, and have evolved based on CAR and SAM Region implementation plans with assistance of the GREPECAS D Projects and regional implementation groups. In this regard, it was noted that regional agreements have been signed in the CAR and SAM Regions and that the ATN was being implemented according to the agreed IPv4 addressing scheme.

3.3.6 AMHS interconnection: Regarding AMHS ground-ground ATN applications, the CAR and SAM Regions have respective regional implementation plans. In the CAR Region, the AMHS Regional Plan was reviewed during the NACC/WG/04 Meeting, and its current version is posted at:
http://www.icao.int/NACC/Documents/eDOCS/Fasid/AMHS%20Implementation%20Matrix%20UPDATE%2018%20April%202012.pdf
In the SAM Region, follow-up to AMHS interconnection implementation is conducted through the SAM/IG meetings. For AMHS interconnection between the CAR/SAM States, there has been some initial coordination to define a preliminary action plan for AMHS interconnection of Peru and Brazil with the United States using the MEVA III - REDDIG II interconnection as physical medium.

3.3.7 Radar data exchange: Radar data shared use/exchange activities have being implemented in most of the continental airspace of the CAR and SAM Regions, providing satisfactory radar coverage for both regions and complying with the GREPECAS agreement regarding the use of ASTERIX as the exchange protocol. Likewise, several coordination and planning activities have been carried out between adjacent CAR and SAM States, specifically between Curacao and Trinidad and Tobago with Venezuela. However, actions have not been implemented on a timely basis and coordination needs to continue in order to expedite these actions.

3.3.8 AIDC implementation: Regarding AIDC implementation and regional goals, the CAR Region has developed this planning within its Regional AIDC Plan, which was also reviewed during the NACC/WG/04 Meeting. It was recommended that the NAM Interface Control Document (ICD) be used as the reference document for implementation taking into account that four NAM/CAR States had

operationally adopted the NAM ICD. There are plans to establish AIDC between Trinidad and Tobago and Venezuela as part of the CAR AIDC Regional Plan. Likewise, follow-up on AIDC implementation in the SAM Region is performed by the SAM/IG, which has developed a *Guide for the implementation of AIDC through the interconnection of adjacent automated centres* (April 2013) based on the ICD adopted by GREPECAS (*ICD for data communications between ATS units in the Caribbean and South American Regions - CAR/SAM ICD)*.

3.3.9 In this regard, the United States informed on efforts being taken to harmonize AIDC and to consolidate the North Atlantic (NAT) ICD and the Asia/Pacific (APAC) ICD into a single ICD, through the ICAO Inter-Regional AIDC Task Force (IRAIDCTF), whose purpose is to produce a final draft document for review by the various ICAO Regions in 2014. The document will be initially presented at the upcoming NATSPG and APANPIRG meetings.

3.3.10 Taking into account the work being done under the GREPECAS D Programme in the CAR and SAM Regions regarding AIDC implementation, the Meeting endorsed the analysis for application of the PAN AIDC ICD in the CAR/SAM Regions for current and future interface using the AIDC protocol. Therefore, the Meeting agreed on the following conclusion:

CONCLUSION 17/9 ACTIVITIES FOR A CONSOLIDATED INTERFACE CONTROL DOCUMENT (ICD) FOR AIDC IMPLEMENTATION IN THE CAR AND SAM REGIONS

That, in order to ensure efficient and practical implementation of AIDC functionality at both intra- and inter-regional levels between the CAR and SAM Regions:

a) ICAO, through the GREPECAS D Programme, shall assess the existing ICDs and coordinate the necessary activities for development of a consolidated Interface Control Document (ICD) for AIDC implementation in the CAR and SAM Regions; and

b) D Programme Projects shall submit the results of coordination for a consolidated ICD for the CAR and SAM Regions at the GREPECAS PPRC/3 Meeting.

3.3.11 The Meeting noted the following inter-regional ATM activities between the CAR and SAM Regions, and between the CAR and SAM Regions and other ICAO regions, as described in Appendix A to WP/10:

- Seventeenth Informal Regional Coordination Meeting on continuous improvement of air traffic services over the South Pacific (SAT/17 – Las Palmas, Spain, 18-20 April, 2012)

- ICAO/WMO CAR/SAM Seminar/Workshop on MET requirements in support of ATM (Mexico City, Mexico, 22-24 October 2012)

- ICAO Seminar on Volcanic Ash Products and Communications for the NAM/CAR/SAM Regions (Mexico City, Mexico, 24-26 October 2012)

- Course/Workshop on PBN Airspace Planning Concepts (Miami, United States, 11-22 March, 2013)

- Eighteenth Informal Regional Coordination Meeting on the Continuous Improvement of Air Traffic Services Over the South Pacific (SAT/18 – Dakar, Senegal, 17-19 July, 2013)

- ICAO NAM/CAR/SAM Search and Rescue (SAR) and Civil/Military Coordination Seminar (Mexico City, Mexico, 26-30 May 2014)

CARSAMMA activities

3.3.12 The Meeting noted the activities carried out by CARSAMMA as described in WP/07 and noted that out of the data provided to CARSAMMA on air traffic operations by the CAR and SAM States only 42% and 78% of the information provided by SAM and CAR States, respectively, had been used due to errors with completion of the forms sent to the Agency. Detailed information is contained in Appendix A to WP/07.

3.3.13 Likewise, the Meeting was informed that based on the study carried out by CARSAMMA, the Agency had identified 407 and 157 flights in Reduced Vertical Separation Minimum (RVSM) airspace in the SAM and CAR Regions, respectively, which were not registered in the RVSM-Approved Aircraft Global Database, accounting for 0.18% and 0.44% of the total number of flights, respectively.

3.3.14 The Meeting also noted that 58% of Large Height Deviations (LHDs) that occurred in the CAR and SAM Regions could not be used for safety assessment calculations due to missing or inaccurate information in the LHD forms, thus significantly affecting the RVSM airspace risk estimates. More information on the number of LHDs not used in the Collision Risk Model (CRM), location of the main points experiencing the largest number of LHDs, the most common LHD types, and flight time at incorrect levels may be found in Appendix A to WP/07.

3.3.15 As an urgent measure to mitigate the problems identified in the completion of air traffic movement and LHD forms, the Meeting noted that CARSAMMA had decided to organize a meeting of CAR and SAM focal points in Rio de Janeiro, Brazil, from 11 to 13 August 2014.

3.3.16 The Meeting noted that for 2013 the preliminary total risk estimated for the Flight Information Regions (FIRs) under study, prior to the analysis by the Scrutiny Working Group, was 1.19 x 10^{-8}, which is above the Target Level of Safety (TLS) of 5.0 x 10^{-9}. This value could change depending on the results of the Fourteenth GTE Meeting.

3.3.17 The Meeting recalled that the CARSAMMA and GTE Terms of Reference (TORs) as well as the conclusions of the GTE/12 Meeting, which had been approved through the GREPECAS fast-track mechanism, as shown in Appendices A and C to WP/23.

3.3.18 The Meeting noted that some Area Control Centres (ACCs) had implemented automated transfers but a coordination problem still existed that was not reflected in the Letters of Operational Agreement between adjacent FIRs, especially reception of flight plans, flight plan duplication, or lack of aircraft altitude specifications (climb/descent) for handover purposes. Likewise, the absence of control transfer had increased significantly, generating a serious loss of situational awareness at the expense of safety.

3.3.19 The Meeting noted that many bilateral meetings had been held among States to minimize or eliminate operational errors that corresponded to M- and N-coded LHDs. Some transfer points between

FIRs still have no reliable handover procedures. Multilateral meetings and discussions have a positive impact on safety. States should revise their LOAs to include the necessary procedures for ensuring correct control transfer, thus minimizing M- and N-coded LHDs.

3.3.20 The Meeting considered that the quality of the data contained in LHD reports sent by the States to CARSAMMA was deficient. Consequently, a high percentage of LHDs (58%) cannot be used for safety assessment calculations due to missing or inaccurate information in LHD forms.

3.3.21 The lack of data quality sent to CARSAMMA results in the Agency having to start a process of data investigation and clarification, thereby increasing workload throughout the process and causing delays in LHD validation by the GTE, which is currently taking seven months. In view of the above, the Meeting decided that:

a) As immediate action, GTE teleconferences for LHD validation would be divided by the corresponding CAR and SAM Region in such a way that the ICAO Regional Offices and Rapporteur organize the teleconferences and assist with State consultations in their respective region whenever CARSAMMA identifies missing or unclear information.

b) In the short term, it is of vital importance to conduct training for CARSAMMA focal points as scheduled for the second week of August (in Spanish) and that the ICAO Regional Offices make arrangements as necessary for this same training to be conducted in English for English-speaking States and Territories.

c) A project shall be developed to obtain a sustainable solution to mitigate problems with entering air traffic movement and LHD data in the forms, including tasks to redistribute workload, reduce LHD validation times, and monitor data quality more efficiently.

3.3.22 The Meeting was informed that after the analysis of all LHD reports, CARSAMMA and the GTE noticed that 94% of the LHDs reported are due to human factors during ATC-to-ATC transfer or control responsibility coordination errors. In addition, it was noted that since 2011 CARSAMMA and the GTE have been working using the new quantitative and qualitative methodology for risk analysis; CRMa from the Safety Management System (SMS) methodology to analyze LHD reports, contained in the Manual-Guide on the Assessment of Large Height Deviations (LHDs).

3.3.23 Based on this new methodology, the Meeting noted the increase in LHDs in the CAR and SAM Regions from 49% in 2012 to 54% in 2013, and realized that mitigation actions by States/Territories are required. It was also recognized that this type of information provides a valuable tool for States to require implementation of specific plans for these purposes. It was deemed appropriate to approve the Manual-Guide on the Assessment of Large Height Deviations (LHDs) that is based on an ATS SMS, which is included in **Appendix B** to this part of the report. As a result, the Meeting formulated the following conclusion:

CONCLUSION 17/10 MANUAL-GUIDE ON THE ASSESSMENT OF LARGE HEIGHT DEVIATIONS (LHDs) WITH SMS METHODOLOGY FOR THE ANALYSIS AND ASSESSMENT OF LHD REPORTS

That the States of the CAR/SAM Regions use the Manual-Guide on the Assessment of Large Height Deviations (LHDs) with SMS methodology presented in Appendix B to this part of the report for the analysis of LHDs reports.

Support for Inter-regional Activities

3.3.24 The United States provided information on efforts pertaining to Air Traffic Services Message Handling System (AMHS), the MEVA Network, North America (NAM) Interface Control Document (ICD), Air Traffic Flow Management (ATFM), Automatic Dependence Surveillance – Broadcast (ADS-B), and Performance Based Navigation (PBN) described in the ATM and CNS inter-regional activities in WP/28. Additionally, the following activities were reported:

- ATFM: a series of seminars were carried out via Internet *(webinars)* through the *Go-To-Meeting* (GTM) system to provide an introduction to the application of ATFM methodologies. A secondary goal was to develop team dynamics among the regional participants in order to learn and benefit from each other's diverse experiences.

- The "*Flexible Use of Airspace*" (FUA) programme objective was incorporated into the syllabus and was scheduled to be delivered to CAR and SAM Air Navigation Service Providers (ANSPs). The original intent was to build forward momentum among ANSPs and followed by more advanced concepts with regard to FUA.

- ADS-B: a number of significant discussions were held regarding differences between the different versions of ADS-B. Many States were not aware that Version 2 (DO-260B) equipment existed and already in use. Many States were interested in the reasons behind the U.S. rule requiring aircraft to equip with Version 2 systems. A second area of interest dealt with the different ground implementation, such as Wide Area Multilateration (WAM) and the use of ADS-B on helicopters for operations in the Gulf of Mexico.

States-Industry Collaborative Process for the CAR and SAM Regions

3.3.25 Under IP/15, the Meeting was informed by Brazil, United States, ALTA, IATA, IFALPA and RTCA that the main challenges in achieving the goals of the *Bogota* and *Port-of-Spain Declarations* are the inherent issues in transitioning from current systems to the ones specified in the ASBU framework. In this regard, information was provided regarding the advantages of including a collaborative decision-making process that operates as a mechanism to define the steps required to implement near and mid-term operational capabilities already defined in regional plans.

3.3.26 Brazil stated that unfortunately IP/15 was provided too late to be a working paper. However, in accordance with Doc 8144 – *Directives for Regional Air Navigation Meetings*, paragraph 11.1, Brazil made a request to discuss IP/15, proposing implementation of this process in the CAR and SAM Regions.

3.3.27 United States seconded Brazil's proposal to include this process in the SAM/IG and ANI/WG regional implementation groups. This process will ensure close cooperation by States and industry with regional implementation of ASBUs and operational capabilities in the most efficient manner.

3.3.28 Guatemala, COCESNA and CANSO also supported the Brazilian proposal.

3.3.29 The Meeting agreed that the SAM/IG and ANI/WG regional implementation groups may consider the best options of the proposed framework, approve a coordinated Pan-American approach, and that the suggestion be presented to the PPRC.

FORM TO FOLLOW UP ON THE PROGRESS ON INDICATORS AND TARGETS FOR THE CAR/SAM REGIONS BY GREPECAS

Indicators		CAR		SAM	
		Current Value	**Goal December 2016**	**Current Value**	**Goal December 2016**
1. PBN TERMINAL	% of international aerodromes with APV, in accordance with Resolution A-37/11	N/A	N/A		100%
	% of runways with APV instrument approach with Baro VNAV, in accordance with Resolution A-37/11		80%	N/A	N/A
2. PBN EN-ROUTE	% of ATS routes with PBN	N/A	N/A		60%
	% of international aerodromes with PBN SIDs/STARs	N/A	N/A		60%
3. CDO	% of international aerodromes/TMAs with CDO	N/A	N/A		40%
4. CCO	% of international aerodromes/TMAs with CCO	N/A	N/A		40%
5. Fuel / C02 savings	Reduction of emissions based on IFSET		Annual reduction of 40,000 Tons of CO_2		Annual reduction of 40,000 Tons of CO_2
6. ATFM	% of Area Control Centres (ACCs) providing Air Traffic Flow Management (ATFM) service		100% (by December 2018)		100%
7. AIM	% of elements (AIS to AIM roadmap) required for AIS-to-AIM transition that have been implemented in Phase I		100%		100%
8. AMHS interconnection	% of AMHS interconnections at regional level	N/A	N/A	15%	100%

Indicators		CAR		SAM	
		Current Value	**Goal December 2016**	**Current Value**	**Goal December 2016**
9. Interconnection of automated systems (ATS inter-facility data communications – AIDC)	% of automated system interconnections		50% of ACCs with at least 1 interface (AIDC/OLDI)		100%
10. Implementation of domestic IP networks	% of SAM States with IP communication networks implemented	N/A	N/A		80%
11. Aerodromes Certification	% of certified international aerodromes		48%		20%

APPENDIX B

Manual on the Assessment of Large Height Deviations (LHDs) based on an ATS Safety Management System (SMS) for the CAR/SAM Regions

Version 1.0 – June 2014

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1. INTRODUCTION

The Scrutiny Task Force (GTE) and the CAR/SAM Monitoring Agency (CARSAMMA) have developed a methodology for the analysis and assessment of Large Height Deviations (LHDs), based on a Safety Management System (SMS), with the purpose of increasing the level of safety in CAR/SAM RVSM airspace.

This methodology is used for assessing the level of risk of each occurrence individually, and helps to identify trends and critical points of occurrence.

CARSAMMA will continue calculating the Risk Value using the Collision Risk Model (CRM) established in ICAO Doc 9574 (Manual on implementation of a 300m vertical separation minimum between FL290 and FL410 inclusive), using a TLS of 5 X 10^{-9} fatal accidents per hour of flight as reference parameter. The objective is to conduct a quantitative (CRM) and qualitative (SMS) assessment of operations in RVSM airspace and increase the level of safety in the CAR/SAM Regions.

2. Background

The GTE recognised the need to analyse LHDs applying a safety management system (SMS) approach, since the Collision Risk Model uses a mathematical formula to calculate the level of risk of the Regions without giving details of the occurrences analysed.

The GTE has been using the SMS methodology to analyse and assess LHDs since 2011. This methodology allows CAR/SAM States and international organisations to analyse, adopt and implement measures to mitigate LHDs in their respective FIRs.

3. LHD Analysis and Assessment

During the analysis, the cause of the occurrence is identified using the LHD code table, which is contained in appendix B to this manual.

Following the identification of the causes (LHD code) by CARSAMMA, the GTE must analyse the risks associated to each LHD code that has been identified, assessing their severity and likelihood of occurrence.
For the **Severity Analysis**, the GTE team, based on its experience, applies the Severity Table as follows:

Effects	Severity of Hazard (LHD)

	Catastrophic 5	Hazardous 4	Major 3	Minor 2	Insignificant 1
ATC	**Collision with aircraft, ground or obstacle. TCAS (RA) warning**	**Significant reduction of separation or total loss of capacity (ATC zero)**	**Significant reduction of separation or ATC capacity**	**Slight reduction of ATC capacity or significant increase of ATC workload**	**Slight increase of ATC workload**

Table 1

Each code is associated to an LHD severity based on the impact on safety:

5	4	3	2	1
J, K	**B, D, F, G, H, I**	**A, C, E, L**	**E**	**M**

Table 2

After determining the severity, the **Likelihood** is established based on statistical data showing the points with higher rates of occurrence in the CAR/SAM Regions, bearing in mind the worst-case scenario. To this end, the following table is used:

Likelihood	Level of ATC service/system	Operational
Frequent 5	Continuously occurring in the system	Expected to occur every 1-2 days
Occasional 4	Expected to occur frequently in the system	Expected to occur several times a month
Remote 3	Expected to occur several times during the lifetime of the system	Occur approximately once every few months
Unlikely 2	Unlikely, but may be reasonably expected to occur during the lifetime of the system	Expected to occur approximately once very three years
Extremely unlikely 1	One of them is unlikely but possible in the lifetime of the system	Expected to occur approximately every 30 years

Table 3

After determining the likelihood, the duration of the occurrence is established based on the following table:

1 Short	**$d \leq 1$ minutes**
2 Medium	**$1 < d \leq 2$ minutes**
3 Long	**$d > 3$ minutes**

Table 4

Thus, the following expression may be used:

Likelihood (P)	Duration (D)	Severity (G)
5 Frequent		5 Catastrophic
4 Occasional		4 Hazardous
3 Remote	3 Long	3 Major
2 Unlikely	2 Medium	2 Minor
1 Extremely unlikely	1 Short	1 Insignificant

Table 5

Once the aforementioned values have been obtained, it is determined whether the FIR that is subject to the risk has an ATS surveillance system, if meteorological conditions were VMC or IMC, and whether there was other conflicting traffic, based on which the following values are assigned:

Surveillance system	Meteorological conditions	Other traffic
YES = 5	VMC = 0	With surveillance = 10
NO = 10	IMC = 5	Without surveillance = 10

Table 6

4. Risk Value Calculation

Once the aforementioned data is obtained, the following formula is applied for calculating the risk value:

VR = (PxDxG)+R+W+T, where:

Parameter	Description	Value
VR	Risk value	To be calculated
P	Probability of the position	Varies from 1 to 5
D	Duration of the occurrence	Varies from 1 to 3
G	Severity of the occurrence	Varies from 1 to 5
R	With or without ATS surveillance	With=5 or Without=10
W	Meteorological conditions	VMC=0 or IMC=5
T	Other traffic (if any)	10
	TOTAL	Maximum 100 points

Table 7

5. Target level of safety (TLS)

Once the LHD analysis and assessment process has been completed, the resulting Risk Value for each LHD is inserted in the risk matrix, which is designed to show if the level of risk of each occurrence is above or below the TLS that has been defined as the acceptable level for the CAR/SAM Regions, *i.e.,* 20 points.

RV	Risk Level	Control
76-100	**HIGH**	**Unacceptable risk, RVSM airspace must be cancelled until the hazard is mitigated and the risk is reduced to the medium or low level**
21-75	**MEDIUM**	**Acceptable risk, but monitoring and management are mandatory.**
01-20	**LOW**	**Acceptable without restriction or limitation, hazards do not require active management, but must be documented.** **.**

Table 8

After defining the level of risk for each LHD, the States and international organisations shall develop and implement mitigation plans, as needed, which shall be presented at face-to-face GTE meetings. The analyses conducted by CARSAMMA and the GTE at the virtual and face-to-face meetings will be presented in a final report to the ICAO Mexico City and Lima Regional Offices and at GREPECAS meetings.

6. Terms of Reference (TOR) of the CAR/SAM Regional RVSM Scrutiny Group (GTE)

The Terms of Reference (TOR) of the CAR/SAM Regional RVSM Scrutiny Group (RVSM/SG), known as the GTE, were established with a view to analysing issues affecting the TLS, based on LHD information provided by the States and international organisations.

Terms of reference

a) To assemble safety management subject matter experts in air traffic control, aircraft flight operations, regulation and certification, data analysis, and risk modelling;

b) To analyse and evaluate large height deviations of 300 ft or greater as defined in ICAO Doc 9574, Manual on the implementation of a 300 m (1 000 ft) vertical separation minimum between FL 290 and FL 410 inclusive;

c) To coordinate the collection and review of large height deviation data with the CARSAMMA;

d) To determine and validate an estimate of the flight time away from the cleared flight level to be used to estimate the Collision Risk Model (CRM) made by CARSAMMA;

e) To identify safety trends based on the analysis of large height deviations (LHD) reports, recommend mitigation actions in accordance with ICAO SMS provisions, and submit annual reports on safety assessment results to GREPECAS so as to improve safety in the RVSM airspace of the CAR/SAM Regions; and

f) To accomplish other tasks as directed by GREPECAS.

Composition:

CAR and SAM States, CARSAMMA, COCESNA, IATA, IFALPA, IFATCA, and the Rapporteur.

7. Terms of Reference (TOR) of CARSAMMA

Duties of CARSAMMA:

a) Maintain a central registry of RVSM-approved operators and aircraft of each State/Territory that use CAR/SAM RVSM airspace;

b) Facilitate the transfer of approved data to and from other RVSM Regional Monitoring Agencies (RMAs);

c) Establish and maintain a database containing the height-keeping errors and height deviations of 300 ft or more within CAR/SAM RVSM airspace;

d) Submit timely information for State civil aviation authorities (CAAs) on changes or monitoring status of aircraft type classifications;

e) Submit the results of the monitoring flight using the GPS global monitoring system (GMS);

f) Provide the means for identifying aircraft non-RVSM approved operating in the CAR/SAM RVSM airspace, and notify the appropriate State civil aviation authority (CAA) accordingly;

g) Develop the means for summarising and communicating the content of relevant databases to the RVSM Scrutiny Group (GTE) for the corresponding safety assessment; and

h) Conduct the assessment of the collision risk level (CRM) in the RVSM airspace of the CAR/SAM Regions, in accordance with ICAO Doc 9574 and Doc 9937.

Appendix A

Acronyms:

GTE:	Scrutiny Group/ Grupo de Tarea de Escrutinio
LHD:	Large Height Deviation / Grande Desviación de Altitud
CAR:	Caribbean / Caribe
SAM:	South América / Sur América
RVSM:	Reduced Vertical Separation Minimum / Separación Vertical Mínima Reducida
CARSAMMA:	Caribbean and South American Monitoring Agency / Agencia de Monitoreo del Caribe y Sur América
SMS:	Safety Management System / Sistema de Gestión de la Seguridad Operacional
CRM:	Collision Risk Model / Modelo de Riesgo de Colisión
FIR:	Flight Information Region / Región de Información de Vuelo
VMC:	Visual Meteorological Conditions / Condiciones meteorológicas de vuelo visual
IMC:	Instrument Meteorological Conditions / Condiciones meteorológicas de vuelo por instrumentos
TLS:	Target Level of Safety / Nivel de Seguridad Operacional
ICAO / OACI:	International Civil Aviation Organization / Organización de Aviación Civil Internacional
GREPECAS:	CAR/SAM Regional Planning and Implementation Group
TOR:	Terms of Reference / Términos de Referencia

Appendix B

LHD Code Table

LHD CODE	LHD Code Description
A	Fail to climb/descend the aircraft as cleared.
B	Climb/descent without ATC clearance.
C	Incorrect operation or interpretation of airborne equipment (*e.g.*, incorrect operation of fully functional FMS, incorrect transcription of ATC clearance or re-clearance, flight plan followed rather than ATC clearance, original clearance followed instead of re-clearance, etc.)
D	ATC system loop error (*e.g.,* ATC issues incorrect clearance or flight crew misunderstands clearance messages)
E	Coordination errors in the ATC to ATC transfer or control responsibility as a result of human factors issues (*e.g.,* late or non-existent coordination, incorrect time estimate/actual, flight level, ATS route, etc., not in accordance with agreed parameters)
F	Coordination errors in the ATC to ATC transfer or control responsibility as a result of equipment outage or technical issues.
G	Deviation due to aircraft contingency event leading to sudden inability to maintain assigned flight level (*e.g.,* pressurisation failure, engine failure)
H	Deviation due to airborne equipment failure leading to unintentional or undetected change of flight level
I	Deviation due to turbulence or other weather related cause
J	Deviation due to TCAS resolution advisory, flight crew correctly following the resolution advisory
K	Deviation due to TCAS resolution advisory, flight crew incorrectly following the resolution advisory.
L	An aircraft being provided with RVSM separation is not RVSM approved (*e.g.,* flight plan indicating RVSM approval but aircraft not approved, ATC misinterpretation of flight plan)
M	Other – this includes situations of flights operating (including climbing/descending) in airspace where flight crews are unable to establish normal air-ground communications with the responsible ATS unit.

Agenda Item 4 Regional air navigation planning and implementation performance framework: Review of programmes and projects

4.1 Projects of the PBN Programme

Under this agenda item, the following working papers were discussed:

- WP/11(Secretariat), IP/11 (Paraguay), IP/13 (Brazil) and IP/14 (SACCSA Project)

4.1.1 The Meeting took note of the progress made since the PPRC/1 meeting regarding activities under the projects pertaining to Programme A: *Performance-based navigation (PBN),* as detailed in **Appendices A1**and **B1** to this part of the Report:

CAR Region

Project A1 "PBN Implementation"

4.1.2 Recent PBN airspace concept implementation developments in the CAR Region include:

- RNP-10 in the New York Oceanic West FIR, RNP 10 and random RNAV routes in the oceanic airspace of the Gulf of Mexico and the Houston and Miami Oceanic FIRs
- Random RNAV-routes in the Piarco FIR
- Review of RNAV 5 routes in continental upper airspace
- The percentage of PBN approach procedures implementation has exceeded the goal established in Assembly Resolution A 37-11
- Costa Rica, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Trinidad and Tobago and COCESNA have submitted reports on the implementation of PBN airspace redesign projects
- Space/Satellite-Based Augmentation System (SBAS) and Wide Area Augmentation System (WAAS) aspects continue to be examined

4.1.3 **Appendix A1** to this part of the report shows the PBN implementation progress and results as reported to ICAO Headquarters in Montreal for the dashboards. Based on the progress reports and taking into account that several tasks have been completed, the CAR States have established new goals as shown below:

- 80% of runways using instrument approaches with Approach Procedures with Vertical guidance (APV), Barometric Vertical Navigation (Baro-VNAV), implemented by service providers and users by December 2016
- 80% of international aerodromes using PBN STARs implemented by December 2016
- 60% of international aerodromes using PBN SIDs implemented by December 2016

- 50% of international aerodromes using CDO implemented by December 2016
- 60% of international aerodromes using CCO implemented by December 2016

SAM Region

Project A1 "PBN Implementation" – PBN Implementation Strategy in the SAM Region

4.1.4 **Appendix A2** to this part of the report includes details of the PBN implementation strategy in the SAM Region, which can be summarised as follows:

- Distance training
- Participation in Workshop I on PBN airspace design, with preliminary designs of the Asunción and Bogota terminal areas
- Participation in Workshop II on PBN airspace design, covering:
  - basic preliminary design of a selected TMA
  - integration of the entry and exit points of these TMAs
- Draft Version 03 of the SAM route network

4.1.5 With regard to the above mentioned PBN 1 Workshop, the Meeting took note that several States of the SAM Region informed that this event has enabled the development of the PBN action and design plans of their main Terminal Control Area (TMA), which will be presented in PBN 2 Workshop, for optimization and harmonization purposes. In this regard, the delegation of Colombia made a presentation on their planning for the implementation of a new airspace concept in the Bogota TMA, with PBN use, based on the knowledge and preliminary design developed in the PBN 1 Workshop.

4.1.6 SAM Route Network Optimisation Programme: The meeting took note that thanks to the SAM Route Network Optimisation programme and the planning conducted by SAM/IG meetings and implemented by the SAM ATS Route Network Optimisation (ATSRO) meetings, significant emission reductions have resulted, as shown in the following table (see Appendix A2):

Selected period	Reduction of CO_2 emissions in tonnes
2001 to 2012	**134.460**
2013	**39.468**
1st semester 2014	**14.295**

4.1.7 The implementation status of RNAV, SID, and STAR routes and PBN-based approach procedures are shown in **Appendix** A2. In summary, 38% of SAM routes are RNAV-5, and 48% of SIDs/STARs and 61% of approach procedures in the SAM Region are based on PBN.

Project A2 "Air Navigation System in Support of PBN"

4.1.8 As explained under Agenda Item 3, the Meeting took note that the web-based RAIM availability prediction service managed by this Project was foreseen to be available by September 2014 and whose implementation would initially require coordination amongst SAM States, the Secretariat, and the service provider in order to define the web page format, mode of access through password assignment, and verification of information accuracy. This will be an on-going activity to be carried out *via* web-based teleconferences. Once available and operational, the States shall use the service and encourage all stakeholders to use it efficiently.

4.1.9 The Meeting took note of the significant progress in PBN implementation in the CAR/SAM Regions, highlighting the results in compliance of Assembly Resolution A37-11. However, the need to increase the number of qualified personnel and improve training programmes has been identified, as well as to improve PNB operational approval programmes for inspectors of Civil Aviation Authorities (CAA).

4.1.10 The Meeting also thanked the collaboration of IATA and CANSO in the organization of workshops on PBN airspace redesign, in which inspectors for PBN training have been identified in their own States.

4.1.11 In this regard, the Meeting took note that NACC and SAM Regional Offices have developed a regional strategy of workshops for PBN airspace training and redesign, as a mechanism to ensure training of States' experts, as well as to look for a harmonized implementation of a PBN airspace concept in both regions.

4.1.12 The Meeting took note that ICAO Fuel Savings Estimation Tool (IFSET) provides an estimate of the reduction on CO_2 emissions; however, this information should be compared with real information from the operators on the use of PBN approach procedures and fuel savings.

4.1.13 The Meeting also noted the experience of a State to obtain this information, which is considered strategic by air operators and that they might be reluctant to share it. Nevertheless, the Meeting considered important for States to coordinate with air operators so as to obtain effective information on fuel savings and reduction of CO_2 emissions as a result of the use of RNAV routes and PBN approach procedures and provide this information to the ICAO NACC and SAM Regional Offices. Furthermore, a State reminded the Meeting that air transport statistics to be submitted to ICAO included Form M, which had to be completed with the information on FUEL CONSUMPTION AND TRAFFIC - INTERNATIONAL AND TOTAL SERVICES, COMMERCIAL AIR CARRIERS.

Other activities related to PBN and air navigation systems in support of PBN

4.1.14 The Meeting took note of the progress of Paraguay regarding the development of the Project for the Implementation of the Performance-based Navigation (PBN) concept in Terminal Airspace Design-TMA ASU as described in IP/11 of this Meeting.

4.1.15 The Meeting was informed of the activities carried out in Brazil for the commissioning in July 2011 of a Honeywell GBAS SL 4000 station, certified by the FAA to operate in mid-latitudes, at the Galeao International Airport in Rio de Janeiro, Brazil.

4.1.16 In this regard, the instability in the operation of the GBAS station showed that the threat model used for the mid-latitudes did not fully apply to low latitudes. In such sense, in October 2013, the aeronautical administration of Brazil started to develop a ionospheric threat model to certify the SL 4000 GBAS at the Galeao airport in Rio de Janeiro, based on the data collected by the GBAS station and the GPS receiver network from July 2011 to April 2014.

4.1.17 The phase of data collection, analysis and development of a preliminary threat model was completed. Tests to validate the final ionospheric threat model will be completed by October 2014, system certification by July 2015 and start-up of GBAS operations in the first quarter of 2016.

4.1.18 The Meeting was informed of the progress of RLA/03/902 Project - "Transition to GNSS/SBAS in the CAR/SAM Regions – SACCSA", describing the activities carried out, the progress of the working packages, financial situation, results and conclusions. The project highlighted the activities developed since the Ninth Meeting of the Project's Coordination Committee, such as: transfer of the technical coordination, contracts of working packages, submission of the final version of the Project Document, version O, teleconference among the Project Members, update of the programme of activities and preparation of Project's information papers for ICAO events. Tentatively, for October 2014, it is foreseen to carry out in Colombia, the Tenth and last Meeting of the Coordination Committee (RCC/10), during which the project will be closed and, through a workshop, the Members will be informed of the final results.

4.2 Projects of the ATFM programme

- WP/12 (Secretariat)

4.2.1 The Meeting took note of the progress made in the activities under the projects pertaining to Programme B: *Improve demand-capacity balancing* since the PPRC/1 meeting, as described in the **Appendices B1** and **B2**to this part of the Report.

CAR Region

Project B1 "Improve Demand-Capacity Balance (DCB)"

4.2.2 Within the ATFM implementation activities in the CAR Region, participation of responsible parties, representing 100% of CAR Region FIRs, was achieved through the regional teleconferencing programme conducted on a weekly basis or, if required, on a daily basis during the winter and hurricane season, using the regionally agreed methodology.

4.2.3 The Meeting took note that some States do not have the requirement to implement ATFM units, as they have not reached traffic levels at their airports and ATC sectors that justify the implementation of the elements or functions of an air traffic flow management system. However, ATFM coordination is done through Flow Management Units (FMUs) established at the Area Control Centres (ACCs) in the CAR FIRs.

4.2.4 For a regionally harmonised ATFM implementation, a greater commitment from the States is required. Accordingly, the States have undertaken to implement ATFM measures in 100% of ACCs within the FIRs by December 2018. Additional ATM situational awareness requirements will be defined in the short term.

Project B2 "Flexible Use of Airspace (FUA)"

4.2.5 Approximately 80% of CAR States have established units for civil/military coordination between civil ATS units and the appropriate air defence units. The Committees have made it possible to integrate civil and military aviation activities in CAR States, including the provision of SAR services.

4.2.6 The assessment of special use areas started in 2014 and is expected to be completed in December 2016, based on the implementation of PBN routes and procedures. Assessment aspects include the number of restricted areas in each State, activation schedule, and obtained operational costs and benefits.

SAM Region

Project B1 "Improve demand-capacity balancing"

4.2.7 Regarding the implementation of flow management units or positions, only 36% of States met this goal in 2013. No progress has been registered in the implementation of flow management units during 2014.

4.2.8 Out of a total of 99 international airports in the SAM Region, ATFM service is provided in 45 airports (27 in Brazil, 8 in Colombia, 1 in Chile, 2 in Paraguay and 7 in Venezuela), accounting for 45% of the total number of airports in the Region. This percentage does not include airports in States that are in process of implementation.

4.2.9 The SAM/IG/12 meeting noted that, at the RAAC/13 meeting (Colombia, December 2013), the Civil Aviation Authorities of the Region committed, through the Bogota Declaration, to achieve the goal of having at least one Flow Management Unit (FMU) or Flow Management Position (FMP) implemented in the ACCs by 2016. In this sense, best efforts should be made to achieve implementation and meet the goal as scheduled.

FIFA 2014 Soccer World Cup in Brazil

4.2.10 The Meeting took note that, following a detailed analysis of the information provided by Brazil on the Soccer FIFA 2014 World Cup, the SAM/IG/13 meeting concluded that several actions were needed to allow the SAM States and ICAO to contribute to an adequate air traffic flow management during the FIFA 2014 Soccer World Cup in Brazil. Actions taken are shown in **Appendix B2** to this part of the report.

4.2.11 Brazil acknowledged the support provided by SAM States and by the SAM Regional Office concerning the activities carried out to ensure appropriate flow management during the Brazil 2014 Soccer World Cup. It also informed the Meeting that air traffic management had been successful during the aforementioned event, and that delays had been kept within the levels normally experienced in the Brazilian airspace.

4.2.12 Uruguay also acknowledged SAM States and the SAM Regional Office for the action taken concerning flow management in its airspace, taking into account that its geographical location required close contact with CGNA and the ANSP of Argentina to ensure proper flow of aircraft between Argentina and Brazil. Uruguay also stated that this was an example of synergy between States that could result in effective ATFM action, even if the necessary tools and an FMC/FMU are not yet available.

4.2.13 The Meeting noted that, on occasion of the Brazil 2014 World Cup, flight planning and flow control had allowed for regional coordination of ATFM information amongst ATC units.

4.3 Projects of the ATM Automation and Situational Awareness Programme

- WP/13 (Secretariat)**,** IP/03 (CANSO), IP/08 (Bolivia)

Follow-up on the activities of the Automation and ATM Situational Awareness Projects

4.3.1 The Secretariat reported on the implementation status of the activities under projects pertaining to Programme C: *ATM automation and situational awareness,* and on the deliverables assigned to these projects, highlighting:

- The completion of tasks under Project C3: Implementation of the new ICAO flight plan (FPL) form
- Changes to Programme C, such as: a) in the CAR Region, merging of tasks and deliverables of Projects C1, *Interoperability of automated systems in the CAR Region,* and C2, *Improve ATM situational awareness,* into a single project entitled Project C, *Automation and improved ATM situational awareness;* and b) the addition in the project description document of a field to define Project goals
- Pursuant to Conclusion PPRC 2/5, follow-up of, and action taken with respect to, the recommendations of the Twelfth Air Navigation Conference (AN-Conf/12). A report on the follow-up of these activities is contained in **AppendixC1** to this part of the Report

4.3.2 The Meeting took note that the activities and dates of Projects C had been adjusted, taking into account:

- The updating of regional implementation plans (SAM RPBIP and NAM/CAR RPBANIP
- The establishment of the Bogota and Port-of-Spain Declarations
- The restructuring of the CAR implementation groups into the NAM/CAR Air Navigation Implementation Working Group (ANI/WG)

CAR Region

4.3.3 In this sense, Project C of the CAR Region presented its status report as shown in **Appendix C2** to this part of the Report, highlighting:

- The adoption of the NAM Interface Control Document (ICD) for AIDC implementation
- The draft initial ADS-B Implementation Operational Concept document
- The update of the Regional AIDC implementation plan with Current Flight Plan (CPL) - Logical Acknowledgement (LAM) messages
- Graphical use of the SIGMET tool as implementation reference for the NAM/CAR States
- The participation in the AUTO/SWIM and ADS-B workshops
- The deletion of several deliverables, such as ATFM, due to lack of operational requirement

SAM Region

4.3.4 Similarly, Project C1 of the SAM Region presented its status report as shown in **Appendix C3** to this part of the Report, highlighting:

- The updating of the six Memoranda of Understanding (MoUs) established in the Region for the interconnection of automated systems between adjacent ACCs and signed between States;
- The drafting and signature of new MoUs for the interconnection of automated systems
- The automated operational interconnection between Brazil and Venezuela
- The conduction of interconnection trials between Argentina-Paraguay, Argentina-Chile, Peru-Chile, Peru-Ecuador and Peru-Colombia
- Interconnection of radar data between Brazil and adjacent States: except Venezuela which implementation is delayed until the use of the common interconnection protocol is agreed
- Training events: Practical Operational Course on ATS Interfacility Data Communication (AIDC) (Montevideo, Uruguay, 9 to 13 December 2013); Seminar/Workshop on Technical and Operational Aspects for the

Implementation and Operation of ATC Automated Systems in the SAM Region, Sao Jose dos Campos, Brazil, 24-28 February 2014

4.3.5 Project C2 of the SAM Region did not report any significant progress since the PPRC/2 Meeting. Activities still pending include:

- The guide on technical considerations in support of Multilateration (MLAT)
- The guide on technical considerations in support of ATFM
- Draft action plan for ADS-B implementation in the SAM Region

4.3.6 **Appendix C4** to this part of the Report describes the status of implementation of Project C2.

4.3.7 Based on the above, the Meeting finally approved the planning and implementation status of the projects under Programme C.

Other automation and ATM situational awareness activities

4.3.8 CANSO reported on its FIR Boundary Crossing global project, which encompasses the identification and mitigation of anomalies and/or discrepancies that occur systemically and/or bilaterally/multilaterally, and which are associated to the crossing of FIR boundaries. Through its inter-committee team, the Project will design a comprehensive mitigation strategy and/or a best-practices document, which will be the deliverable to be submitted in June 2015. The project time frame is approximately 14 months, with the delivery of the final product ("best-practices" guidance material or guidelines) at the CANSOs 19th Annual General Meeting (AGM) in June 2015.

4.3.9 The Meeting was informed of a project in Bolivia for the deployment and implementation of multilateration and ADS-B surveillance systems, thus offering a decision-making option for automation in Bolivian airspace to address the growth of passenger and cargo traffic in Bolivia in recent years. The implementation of these surveillance systems responds to global and regional air navigation planning requirements.

4.4 Projects of the Ground-ground and Ground-air Communication Infrastructure Programme

- WP/14 (Secretariat), WP/24 (Secretariat), WP/25 (Secretariat), IP/10 (Paraguay)

4.4.1 The Secretariat informed about the implementation status of activities under Project D - *ATN Infrastructure and its ground-ground and ground-air applications (D)* for the CAR Region and Projects D1, *ATN Architecture*, and D2, *ATN ground-ground and air-ground applications in the SAM Region* both under the *Ground-ground and ground-air communication infrastructure* Programme, details of which are shown in Appendices **D1**, **D2** and **D3** to this part of the Report.

4.4.2 The Meeting took note that project activities had been aligned with the regional air navigation priorities and objectives defined for the CAR and SAM Regions, as reflected in the Port-of-Spain and Bogota Declarations, respectively. Likewise, as a follow-up to Conclusion 2/4 – *Follow-up by States and International Organisations* to AN-Conf/12 recommendations, an analysis was made of the

recommendations and their impact on project activities, the details of which are shown in **Appendix D4** to this part of the Report.

4.4.3 Among the achievements and difficulties encountered in project execution since PPRC/2, the following should be noted:

CAR Region

Project D - ATN infrastructure in the CAR Region and its ground-ground and ground-air applications (D) for the CAR Region

4.4.4 The bidding process for the MEVA III network was completed and negotiations are underway with the winning bidder. It is estimated that the contracts will be signed on 31 July 2014 followed by network implementation and commissioning of the MEVA III network by March 2015.

4.4.5 IPv4 addresses assigned to the CAR Region have been reviewed and updated, as shown in: *http://www.icao.int/NACC/Documents/eDOCS/Fasid/NAMCAR-IPv4AddressingScheme.pdf.*

4.4.6 The AMHS interconnection between the Dominican Republic and the United States has been completed, and the interconnections of Cuba, Curaçao, Saint Maarten, and Trinidad and Tobago for AMHS implementation are underway, in accordance with the CAR Regional AMHS implementation Plan. In this regard, coordination with the ANI/WG AMHS Task Force had taken place to avoid duplication of efforts in the generation of deliverables and completion of activities.

4.4.7 The CAR Regional AIDC Implementation Plan was updated, and progress continues to be monitored.

4.4.8 In June 2014, a preliminary trial was satisfactorily conducted in the Pacific Oceanic sector of the Central American FIR to test ADS-C and CPDLC functionalities. Trials will continue in October 2014 with the complete protocols and the necessary test communications between ANSPs and airlines.

4.4.9 In view of the absence of immediate ATFM and OPMET requirements, it was decided to eliminate these deliverables from the work programme of the Project.

SAM Region

Project D1 – ATN Architecture

4.4.10 The Meeting took note that almost all the activities envisaged in Project D1 had been completed; only the monitoring of REDDIG II network implementation, which is foreseen for the third quarter of 2014, is still pending.

4.4.11 The activities of this project have been carried out without any difficulty. The bidding process for the implementation of the ATN network in the SAM Region (REDDIG II) has been completed and the implementation process has started.

Project D2 – Ground-ground and air-ground ATN applications

4.4.12 Regarding the interconnection of AMHS systems, following a test period that started in 2010 and some difficulties encountered, the interconnection between the AMHS development systems of

Argentina-Peru, Brazil-Peru, and Brazil-Spain was successfully achieved. Commissioning with AMHS systems in operation is foreseen for August 2014.

4.4.13 The implementation of all the twenty-six AMHS interconnections envisaged in the Region was expected to be completed by 2016, in accordance with the Bogota Declaration.

4.4.14 The Meeting took note that the AIDC service between adjacent ACCs has not yet been implemented in the SAM Region. In this regard, operational trials have been successfully conducted between Argentina-Paraguay (March 2014) through their development systems. Likewise, AIDC trials were conducted with partially successful results between Argentina–Chile, Chile-Peru, Colombia-Ecuador, Colombia-Panama, Colombia-Peru, and Ecuador-Peru (February-June 2014).

4.4.15 Regarding the AIDC service and in accordance with the Bogota Declaration, the goal is to implement fifteen interconnections. The yearly implementation schedule (2013-2015) is as follows: 1 in 2013, 8 in 2014 and 6 in 2015.

4.4.16 The Meeting also took note of the development of the *Guide for the implementation of air-ground data link applications in the SAM Region* (October 2013).

Other considerations about the ground-ground and air-ground infrastructure programme

4.4.17 Follow-up to the implementation of the MEVA III Network: The Secretariat supplemented the information provided by Project D of the CAR Region, describing the establishment and characteristics of the MEVA regional telecommunication network, including the progress made in the implementation activities of the MEVA III network, with its Request For Information (RFI) and Request For Proposal (RFP) processes conducted in 2012 and 2013, respectively, its interconnections with other regional networks, and the required characteristics of the MEVA III network. The bidding process was completed in November 2013 and, since early 2014, negotiations have been taking place with the winning bidder, Comsoft.

4.4.18 The Secretariat informed that the MEVA III Network will be a Very Small Aperture Terminal (VSAT)/Time Division Multiple Access/Internet Protocol (TDMA/IP) Multi-Frequency (MF) satellite solution under the IS-14 satellite with flexible interface ports and multiprotocol that will support all voice and data communication services for air traffic control and coordination in the Central Caribbean area, with single or redundant chain configurations and Commercial-Off-The-Shelf (COTS) equipment and/or software. In most cases, the MEVA III is implemented in an end-to-end leased modality. VSAT terminals in the MEVA III network will be constantly monitored and controlled by Comsoft's Network Management Centre (NMC) and backup NMC. Some basic characteristics of the network are shown in WP/24.

4.4.19 For the implementation of the MEVA III network, three additional nodes will be added for the new Network Operations Centre (NOC): two in Bahamas and one in Miami. Each MEVA Member will sign an individual contract with the MEVA III service provider, Comsoft. The implementation of the MEVA III network is scheduled to start in August 2014 and will be operational in March 2015. The MEVA III implementation timetable is shown in the Appendix to WP/24.

4.4.20 Follow-up to the implementation of the REDDIG II network: The Meeting was informed that the implementation of the new REDDIG II started on 21 December 2012 under the terms established in Contract No. 22501200 signed between the INEO & Level 3 Consortium and ICAO, on behalf of all REDDIG member States, for the implementation of the new South American digital network, REDDIG II.

4.4.21 The Meeting noted that with the commissioning of the new South American communication network, the Region will have a modern IP-based digital network. The new digital network (REDDIG II) will consist of two networks: a main network based on VSAT stations, which uses the same bandwidth as the REDDIG but whose equipment makes more efficient use thereof; and a ground network based on Multi-Protocol Label Switching (MPLS) technology, running on fibre optics, which will initially serve as backup to the satellite network, thus increasing network availability.

4.4.22 The Meeting also noted that the REDDIG II would be able of supporting the existing services as well as the new ones envisaged in the *SAM Performance-Based Air Navigation Implementation Plan* (PBIP). The new services will be part of the requirements foreseen for the Aviation System Block Upgrades (ASBU) Blocks 0 and 1 modules, mainly those related to global interoperability of systems and data through globally interoperable system-wide information management (Performance Improvement Area 2 - PIA 2).

4.4.23 The Meeting analysed the successful experience of the operation and maintenance of the existing REDDIG I, and its implementation through an ICAO regional technical cooperation project, and suggested that these mechanisms be used for other regional implementations.

4.4.24 AIDC implementation process in the Asuncion FIR: The Meeting took note that, during the first quarter, Paraguay had coordinated and conducted AIDC message interchange trials in both directions (ABI, EST, CDN, ACP, RJC, TOC, AOC) with the corresponding LAMs and LRMs between the Asuncion and Resistencia (Argentina) control centres, through the EZEIZA simulator. Trials were completed on 14 April 2014 with highly positive results. Thus, the next step would be the operational implementation of AIDC between the two centres on the second semester of 2014.

4.5 Projects of the AGA Programme

- WP/15 (Secretariat) and WP/32 (Bolivia)

CAR Region

Project F1 – Improvements to Aerodrome Certification

4.5.1 With regard to Project F1, the Meeting took note that the main tasks had been completed, which referred to the identification of the implementation statusof the aerodrome certification process; development of an action plan focused on common problems; identification of training requirements; training of aerodrome inspectors in the related documentation; preparation of the corresponding certification documentation; and follow-up on SMS implementation at aerodromes. The tasks enabled an increase in the number of certified airports by 7% with respect to the period 3 years before, reaching 30% of 153 international aerodromes. The objective was to have at least 48% of aerodromes certified by 2016.

4.5.2 **Appendix E1** to this part of the Report described the events carried out in relation to training of aerodrome inspectors in the CAR Region during the last 3 years. It was mentioned that the latest workshops included PANS-AGA aspects dealing with operational management at aerodromes, and provided guidance and procedures for the conduction of the aerodrome certification process, risk analysis, aerodrome compatibility, and checklists.

4.5.3 The president of the Air Navigation Commission intervened to refer to the PANS-AGA document, highlighting the importance of its application and the guidance it provided, especially for the aerodrome certification process.

Project F2 – Improve Runway Safety

4.5.4 In relation to the first phase of Project F2, information was gathered from several international airports in the CAR Region to verify compliance with Annex 14, Vol. I with regards to marking, signs location, lighting, stop bars (if available), graded runway strips and Runway End Safety Area (RESA) (**Appendix E2** to this part of the Report). Due to the lack of participation of the States in this project, so far no significant progress had been reached.

SAM Region

Project F1 – Aerodrome Certification

4.5.5 The Meeting took note that out of the five SAM initial projects, four were closely related and aimed at the implementation of "*Project F1 – Aerodrome Certification*." Considering the progress made in this Project F1 and with the purpose of implementing the projects in the ASBU format regarding efficiency and implementation of modules B0 ACDM (80), B0 A-SMGCS (75), B0 AIXM (30) and B0 AMAN/DMAN (15), the four projects were merged into one single Project F1.

4.5.6 The first and most difficult task under Project F1 was the development of the Latin American Regulations for Aerodromes (AGA LAR), which will become the aerodrome regulations for member States of the Regional Safety Oversight Cooperation System (SRVSOP) – RLA/99/901. The AGA LAR set (LAR 139 - Aerodrome Certification, LAR 153 - Aerodrome Operations and LAR 154 - Aerodrome Design) task was completed in 2012, thanks to funds provided by the SRVSOP.

4.5.7 Training is one of the pillars of aerodrome certification. It is expected that the harmonization of the LAR AGA set with the national regulations of the SRVSOP member States will start during the first half of 2015. In this regard and under the umbrella of the Regional System, so far 70 Aerodrome Inspectors of the SRVSOP member States have been trained on the new LAR AGA regulations, 30 of which are AGA LAR government inspectors who will be part of the Group of regional AGA LAR inspectors of the SRVSOP.

4.5.8 Furthermore, aerodrome certification trials have started to verify the applicability of the LAR AGA set to any aerodrome of the region. For the first trial, the Carrasco International Airport in Uruguay was selected. Likewise, the international airports of Asuncion (Paraguay), Viru Viru (Bolivia), Varadero (Cuba) and Jorge Chavez (Peru) have been offered for the conduction of additional aerodrome certification trials. It should be noted that certification teams would be multinational that is, composed by AGA LAR inspectors from the different member States of the SRVSOP.

4.5.9 The Secretariat informed that these efforts would permit the certification of 20% of aerodromes by 2016, in compliance with the goal established in the Bogota Declaration, a significant progress, taking into account that, when the project started in 2010, the certified aerodromes in the region accounted for 5% and, in 2013, for 8%.

Project F2 - Runway Safety Improvement

4.5.10 The Secretariat informed that this project applies the strategy of avoiding duplication of efforts and rather supporting national and international AGA initiatives. From this point of view, activities are being coordinated with regional organizations such as Latin American and Caribbean Association of Airfield Pavements (ALACPA) and CAR/SAM Regional Bird/Wildlife Hazard Prevention Committee (CARSAMPAF) for the prevention of runway incursions and excursions.

4.5.11 Furthermore, assistance is being provided to the States/aerodromes in the creation of Runway Safety Teams (RST), and training on runway excursions, such as visual aids workshops, SMS for wildlife control in aerodromes, etc., is being offered according to State requirements.

4.5.12 The strategy applied, and the progress made, in projects SAM AGA F1 and F2 are shown in **Appendices E3** and **E4** to this part of the Report, which also contains the name of the AGA experts of the States who have been actively contributing to these projects.

4.5.13 Project F1 – Aerodrome Certification, considers exemptions for the certification of aerodromes built before ICAO SARPS related to Obstacle Limitation Surfaces (OLS) became effective.

4.5.14 In its working paper (WP/32), Bolivia requested the adoption of the necessary actions for the inclusion, within the activities of Project F1, of the development safety assessment guidelines for aerodromes located in mountainous areas, especially in the Andes, where the terrain penetrates OLS, thus generating disconformities due to natural obstacles.

4.5.15 The guidelines should define the minimum contents and the qualitative and quantitative criteria for the acceptance of aeronautical studies (or safety assessments), so that States may certify aerodromes located in mountainous areas in which the OLS are affected, and applicable not only to existing aerodromes, but also to new aerodromes.

4.5.16 It was also requested that a pilot study be conducted by an international team of AGA and PANS-OPS experts at some airport affected by natural obstacles, the results of which would serve as the basis for the drafting of guidance documents for the States.

4.5.17 The Secretariat took note of the requests made by Bolivia, for their inclusion in the Plan of Activities of Project SAM AGA F1 – Aerodrome Certification.

4.6 Projects of the AIM programme

- WP/16 (Secretariat)

4.6.1 The Secretariat reported on the implementation status of the activities under Project G concerning Aeronautical Information Management (AIM) in the CAR and SAM Regions, with its variants G1, *Developments for the supply of electronic terrain and obstacle data (e-TOD) in the States*, and G2 (previously G3), *Development of quality specifications applicable to the digital AIM environment*, for the CAR Region, and projects G1, *Implementation of the provision of electronic terrain and obstacle data (e-TOD)*, G2, *Implementation of aeronautical information exchange systems (AIXM)*, and G3, *Implementation of the quality management system in AIM units*, for the SAM Region, the details of which appear in **Appendices F1** and **F2** to this part of the Report.

4.6.2 The Meeting took note that project activities had been aligned with CAR and SAM regional air navigation priorities and objectives, as reflected in the Port-of-Spain and Bogota Declarations, respectively.

4.6.3 Furthermore, the Meeting examined the recommendations of AN-Conf/12 for their possible impact on AIM Project activities, and discussed a consistent approach based on the priorities established in the ASBU methodology, as discussed by this Meeting.

4.6.4 The Secretariat noted the importance of data quality in ATM services, as a data-dependent user. It also pointed to the need to release the ICAO AIM amendments, documents and manuals (Amendments 39 and 59 to Annexes 15 and 4, respectively, Doc 8126, Doc 8697, Doc 9838, Doc 9991, and PANS AIM) to the international aeronautical community, to assist the States in the AIS-to-AIM transition and the implementation of steps corresponding to the 3 phases of the ICAO AIM Transition Roadmap.

4.6.5 In this sense, Mr. Farid Zizi, President of the ICAO Air Navigation Commission informed on the amendment to Annex 15 and on the publication by the ICAO Secretariat of various manuals (dates to be confirmed).

4.6.6 Furthermore, electronic Terrain and Obstacle Data (eTOD) constitutes a requirement for the States, and has an important application in Obstacle Limitation Surface (OLS) and PBN itself.

4.6.7 Achievements in terms of project implementation since the PPRC/2 meeting, include the following:

CAR Region

4.6.8 For Project G1, *Developments for the supply of electronic terrain and obstacle data (e-TOD) in the States*, 86% of the States have a Geographical Information System (GIS) for the geo-referenced data set management as the basis for e-TOD. They also received from ICAO (NACC Office) a guide document on how to draft the eTOD Action Plan. Likewise, some States have established agreements (LoAs) with other States and/or international organizations to collaborate on eTOD-related issues. It is also important to note that some States and international organizations reported having Action Plans for eTOD implementation.

4.6.9 For Project G2 (previously G3), *Development of quality specifications applicable to the digital AIM environment*, 33% of CAR States and international organizations have completed the implementation of the Quality Management System (QMS), and 48% have started the implementation process (see table 2 in WP/16).

4.6.10 The Meeting expressed its support to the information requirements set forth by the Secretariat. Finally, Paraguay informed about the efforts being made for the acquisition of an automated system for a Geographical Information System (GIS) in support of the evolution of AIM.

SAM Region

4.6.11 Regarding Project G1, *Implementation of the provision of electronic terrain and obstacle data (e-TOD),* an Action Plan was developed for the implementation of improvements to the compliance of G1 indicators/metrics. By 2014, 35% of States had GIS or automated systems already implemented; 100% of States had a guide-document with an approved Action Plan. The number of States that established Service Level Agreements (SLAs) increased to 14% in 2014.

4.6.12 Project G2, *Implementation of aeronautical information exchange systems (AIXM),* still has no coordinator and the Programme Coordinator has fulfilled the tasks at the SAM/AIM/3 and SAM/AIM/4 meetings. Furthermore, the States have not offered to provide experts to coordinate the tasks and develop the project, which has made no progress at all. Nevertheless, this has no significant impact since the ASBU methodology has extended its implementation deadline.

4.6.13 Finally, regarding Project G3, *Implementation of the quality management system in AIM units*, significant progress was made, and all project deliverables were competed, with 5 States certified on QMS ISO 9001:2008 (see table 4 of WP/16).

4.7 Aeronautical MET Programme Projects

- NE/17 (Secretariat), NE/33 (Secretariat)

Project H1 - WAFS Implementation in the CAR/SAM Regions

4.7.1 The Meeting was informed that in 2013, the PPRC/2 meeting had considered Project H1 (CAR/SAM), Implementation of the world area forecast system (WAFS) as completed, since it had successfully achieved its proposed goals.

CAR Region

4.7.2 The Meeting was informed of the achievements of this project as follows:

Project MET H2 – IAVW Implementation

4.7.3 The Meeting was informed of the difficulties in appointing a coordinator for this project in the CAR Region, which prevented the attainment of the expected results. Consequently, it was felt that the project should be cancelled until it had the required expert. However, it urged CAR States to support this project with an appropriate expert.

Project MET H3 – MET/QMS Implementation

4.7.4 The Meeting took note of the problems that occurred at the beginning of the project. Thanks to the valuable assistance of the World Meteorological Organization (WMO) Aeronautical Meteorology Division and assistance missions to the States, it was noted that most CAR States had implemented the MET/QMS and that PPRC/2 meeting had considered this project as completed.

Project MET H4 - Optimization of OPMET exchange, including SIGMETs (WS, WV, and WC), warnings and meteorological alerts

4.7.5 The Meeting was informed that over 90% of the main aerodromes in the CAR Region had METAR/SPECI and TAF reports available. Likewise, the Meteorological Watch Offices (MWOs) of the CAR Region prepare and disseminate SIGMET messages on a timely basis. However, it was necessary to continue reviewing the routine controls performed by the Brasilia OPMET Databank so as to identify State-specific failures. Accordingly, this project remains valid.

4.7.6 The Meeting took note of the follow-up and action taken with respect to MET-related recommendations of AN-Conf/12, as shown in **Appendix G1** to this part of the Report.

SAM Region

4.7.7 The Meeting was informed of the implementation status of the projects that were still valid and noted the following:

Project MET H2 - IAVW Implementation

4.7.8 The Meeting was informed that the tasks assigned had been completed and that the project had achieved its objectives. Likewise, it considered that there were still some tasks needed to implement the letters of agreement between volcano centres, that are not under the jurisdiction of the CAA, and the CAA and the meteorological authority. Furthermore, it endorsed the continuation of volcanic ash exercises and urged State AIS professionals to participate in these exercises, preparing the respective ASHTAMs.

Project MET H3 - MET/QMS Implementation

4.7.9 The Meeting noted that MET/QMS had been implemented in 100% of SAM States, and that 5 States had been certified by an organization approved by the MET/QMS system, in accordance with ISO 9001:2008.

4.7.10 Likewise, the Meeting took note of the concern regarding compliance with MET personnel competence requirements of the World Meteorological Organization (WMO). It also supported the possibility of having audit trials conducted by lead auditors of the Region, funded by RLA Projects or through a Special Implementation Project (SIP).

Project MET H4 – Optimisation of OPMET Exchange

4.7.11 The Meeting noted that the project had achieved its objectives, since no operational problems had been observed during OPMET exchange control tests. Specific problems affecting a specific State had been identified during routine and non-periodic controls conducted by the Brasilia OPMET Databank. Accordingly, the Meeting considered urging the IODB to continue its quarterly OPMET data controls in order to identify specific operational problems on a timely basis and report them to the States concerned so as to carry out the relevant procedures for each specific case.

4.7.12 In addition, the Meeting took note of the concern of Cuba regarding the reports on Regional and Global OPMET Databases requirements, timely availability of OPMET data, and a forum where solutions to OPMET exchange problems can be found. The Secretariat informed that the SAM Region holds COM/MET Meetings to analyse these reports and that, both the CAR and SAM Regions have scheduled a COM/MET Meeting in 2015.

4.7.13 Based on the results of the tasks under the MET Programme, the Meeting formulated the following conclusion:

CONCLUSION 17/11 IMPROVEMENTS IN MET ACTIVITIES

That CAR/SAM States, Territories and International Organisations:

a) continue conducting periodic volcanic ash tests;

b) urge the AIS areas to prepare and disseminate, in coordination with the MET areas, ASHTAM messages when conducting volcanic ash exercises;

c) urge Civil Aviation Training Centres (CATCs) to implement training programmes for MET personnel in accordance with the principles emanating from the World Meteorological Organization (WMO), contained in Publication No.1083 – WMO (PIB-M);

d) secure the funds required for lead auditors to visit other States of the Region to audit the MET/QMS implemented in the CAR/SAM Regions; and

e) urge the Brasilia OPMET Databank to continue conducting OPMET exchange controls on a quarterly basis.

4.7.14 The description on the Aeronautical MET Programme Projects is shown in **Appendices G2**, **G3, G4** and **G5** to this part of the Report.

4.8 General Comments on Programmes and Projects

4.8.1 The Meeting took note of the comments made by the President of the Air Navigation Commission regarding the GREPECAS Programmes and Projects methodology, which was considered as positive since it was result-oriented and aligned with the ASBU. He also mentioned that there was little risk in the implementation in the case of very dynamic States as compared to less dynamic ones, and took note of the structure of GREPECAS, which in fact encompasses two regions with independent implementation processes, but also emphasized the coordination that existed between the two Offices to ensure interoperability. He also identified some opportunities for improvement in some project indicators, which should measure the impact in terms of operational benefits and not only the deliverables of a specific project activity.

4.8.2 Two States expressed their concern regarding the working methodology of the CAR and SAM implementation groups and its possible impact on the future work of GREPECAS.

APPENDIX A1 / APENDICE A1

PROJECT IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN)
PROYECTO IMPLANTACIÓN DE LA NAVEGACION BASADA EN LA PERFORMANCE (PBN)

CAR Region / Región CAR	**PROJECT DESCRIPTION / DESCRIPCION DEL PROYECTO (DP)**	**DP N° A1**	
Programme / Programa	**Project Title / Titulo del Proyecto**	**Start / Fecha inicio**	**End / Fecha término**
Performance Based Navigation /Navegación basada en la performance (PBN) Programme Coordinator / Coordinador del Programma: Victor Hernandez)	*Performance Based Navigation / Navegación Basada en la Performance (PBN)* Project Coordinator / Coordinador Proyecto: Alfredo Mondragón (COCESNA) Exoerts / Expertos contribuyentes: Carl Gayner (Jamaica) Jose Gil (México) Jose Perez (Dominican Republic) Randy Gomez (Trinidad and Tobago) Susan E. Pfingstler (IATA)	2008	2015
Objective /Objetivo	Support the implementation of the ATS route structure in terminal areas (SID/STAR RNAV) and en-route (RNAV) optimization Project, as well as the implementation of RNP approach procedures according to regional performance objectives of the Performance-based Implementation Plan for NAM/CAR (RPBANIP NAM/CAR) Regions. / Apoyar la implementación del proyecto de optimización de la estructura de rutas ATS en el espacio aéreo terminal (SID/STAR RNAV) y en ruta (RNAV), así como la implantación de aproximaciones RNP en base a los Objetivos regionales de performance del Plan de Implementación Basada en la Performance para las Regiones NAM/CAR (RPBANIP NAM/CAR)		
Scope /Alcance	Progressive implementation of PBN and use of GNSS according to the goals of Assembly Resolution A37-11 and the PBN Airspace Concept for the CAR Region. / Implantación progresiva de la PBN y uso del GNSS acorde a las metas de la Resolución de la Asamblea A37-11 y el Concepto de Espacio Aéreo PBN para la Región CAR.		

Metrics / Métricas	• Percentage of instrument runway ends with an approach procedure with vertical guidance (APV), (BARO-VNAV and/or augmented GNSS) either as the primary approach or as a back-up for precision approaches; • Percentage of international aerodromes with implanted SID/STAR RNAV, RNP and continuous descent and climb operations (CDO/CCO); • Estimated fuel saved with operational improvements. / • Porcentaje de final de pistas por instrumentos con un procedimiento de aproximación con guía vertical (APV), (BARO-VNAV y/o aumentación GNSS) sea como aproximación primaria o como apoyo para aproximaciones de precisión; • Porcentaje de aeropuertos internacionales con SID/STAR RNAV, RNP y operaciones de descenso y ascenso continuo (CDO/CCO) implantados; • Ahorros estimados de combustible por mejoras operacionales.
Strategy / Estrategia	The implementation of activities will be coordinated between Project members, the Project Coordinator and the Programme Coordinator. The Programme Coordinator will coordinate with the Project Coordinator requirements of other projects and NAM/CAR implementation working groups. States will develop their respective national programmes of implementation of routes and approach procedures according to PBN Airspace Concept in the CAR Region. Experts nominated by States, Territories and International Organizations will be incorporated to develop tasks as required. / La ejecución de las actividades será coordinada entre miembros del proyecto, el coordinador del proyecto y el Coordinador del Programa. El Coordinador del Programa coordinará con el Coordinador del Proyecto los requerimientos de otros proyectos y Grupos de Trabajo de implementación NAM/CAR. Los Estados elaborarán sus respectivos programas nacionales de implantación de rutas y procedimientos de aproximación acorde al Concepto de Espacio Aéreo PBN de la Región CAR. Se incorporarán expertos nominados por los Estados, Territorios y Organizaciones Internacionales para desarrollar las tareas, según se requiera.
Goals / Metas	• Implement RNAV/RNP routes and RNP approach procedures according to Assembly Resolution A37-11 in 2016: • Implement a PBN airspace concept (CDOs, CCOs, SIDs, STARs, RNAV/RNP route and RNP approach procedures) in 8 FIRs by end of 2014: • Analyze VOR. DME/DME infrastructure requirements for RNP approach procedures. / • Implementar rutas RNAV/RNP y procedimientos de aproximación RNP de acuerdo a la Resolución de la Asamblea A37-11, en 2016; • Implementar un concepto de espacio aéreo PBN (CDOs, CCOs, SIDs, STARs, rutas RNAV/RNP y procedimientos de aproximación RNP) en 8 FIRs a fines de 2014; • Analizar los requisitos de infraestructura VOR, DME/DME para procedimientos de aproximación RNP.

Justification/ Justificación	The Assembly Resolution A37-11, performance-based navigation (PBN) global goals, urged States to implement RNAV and RNP ATS routes and approach procedures in accordance with the ICAO Performance-based Navigation (PBN) Manual, Doc 9613, and requested the PIRGs to include in their work programme the review of status of implementation of PBN by States according to the defined implementation plans and report annually to ICAO any deficiencies that may occur. In addition, NAM/CAR States adopted a regional performance framework on the basis of the regional performance objectives (RPO) of the performance based air navigation implementation plan (RPB-ANIP) for NAM/CAR Regions and the Global ATM Operational Concept. The performance framework includes the implementation of a set of performance common metrics to facilitate comparative analysis of overall regional development, such as operational and economic cost-effectiveness of gate-to-gate flight operations, and the protection of the environment in the planning, implementation and operation processes of the global ATM system. / La Resolución A37-11 de la Asamblea, metas mundiales de navegación basada en performance (PBN), instó a los Estados a implantar rutas ATS RNAV y RNP, así como procedimientos de aproximación de acuerdo al Manual de la OACI sobre Navegación Basada en la Performance (PBN), Doc 9613, solicitando a los PIRGs incluir en sus programas de trabajo la revisión del estado de implantación de PBN por los Estados, de acuerdo a los planes de implantación definidos e informar anualmente a la OACI sobre cualquier deficiencia que pudiera ocurrir. Adicionalmente, los Estados NAM/CAR adoptaron un marco regional de performance en base a los objetivos regionales de performance (RPO) del plan de implantación de navegación basada en performance (RPB-ANIP) para las Regiones NAM/CAR y el Concepto Global de Operación ATM. El marco de performance incluye la implantación de un conjunto de métricas de performance comunes para facilitar el análisis comparativo del desarrollo regional en general, tales como el costo-efectividad operacional y económico de operaciones aéreas puerta a puerta y la protección del medio ambiente en los procesos de planificación, implantación y operación del sistema ATM global.
Related Projects / Proyectos relacionados	• Enhance demand and capacity balancing; • Flexible use of airspace; • Improve ATM Situational awareness; • Implement the New ICAO Flight Plan Form. • Mejorar el equilibrio entre la demanda y capacidad; • Uso flexible del espacio aéreo; • Mejorar la Conciencia Situacional ATM; • Implementación del Nuevo Formato de Plan de Vuelo de la OACI.

Entregables del Proyecto	Relación con el RPB-ANIP NAM/CAR	Responsable	Estado de Implantación*	Fecha entrega	Comentarios
PBN Airspace Concept / Concepto de Espacio Aéreo PBN	RPOs 1, 2, 3	Alfredo Mondragón		Completed / Finalizada	Developed a comprehensive PBN Airspace Concept, in order to implement a trunk route network to/from city pairs in the upper and lower airspace. / Se elaboró un concepto del espacio aéreo PBN integral para implantar una red de rutas troncales desde-hacia pares de ciudades en el espacio aéreo superior e inferior
Optimize the ATS route structure based on RNAV-5 implementation in the upper continental airspace . / Optimizar la estructura de rutas ATS en base a la implementación de RNAV 5 en el espacio aéreo superior continental	RPOs 1.1	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	RNAV 5 Routes implemented in the upper airspace. / Rutas RNAV 5 implantadas en el espacio aéreo superior.
Implement SIDs/STARS, CDO and CCO in terminal areas based on RNAV/1-2 and RNP1 navigation specifications. / Implementar SIDs/STARS, CDO y CCO en áreas terminales en base a especificaciones de navegación RNAV/1-2 y RNP1	RPOs 1.2	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	-211 SIDs implemented /implementadas -145 STARs implemented /implementadas -Implemented STARs /SIDs meet CDO/CCO criteria. / Las STARs / SIDs implementadas cumplen con criterios CDO/CCO.

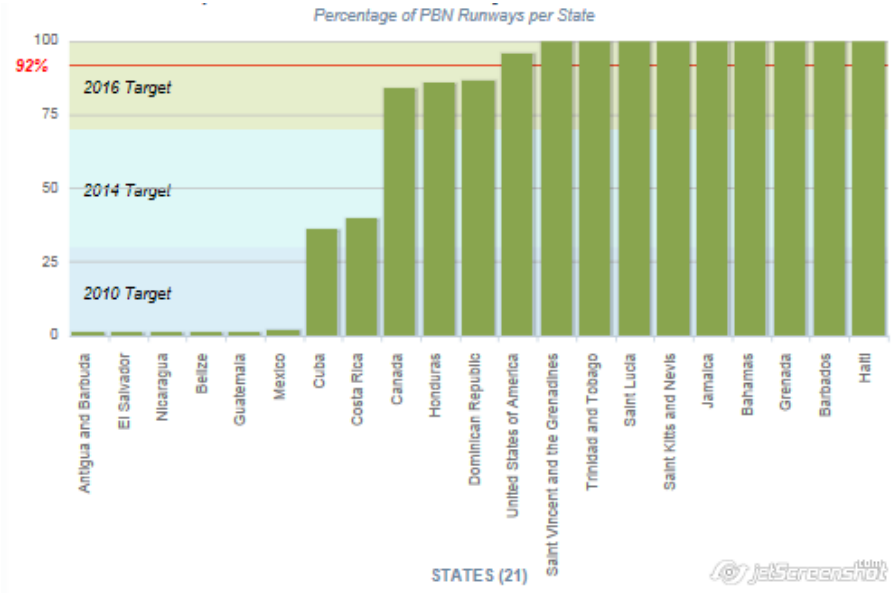
Design and implement PBN APV approach procedures in accordance with Assembly Resolution A37-11 (BARO-VNAV), / Diseñar e implementar procedimientos de aproximación PBN APV (BARO-VNAV) según la Resolución de la Asamblea A37-11	RPOs 1.3	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		2014	152 RNP approach procedures implemented. / 152 procedimientos de aproximación RNP implementados.
Analysis to implement a comprehensive PBN airspace concept for the lower and upper airspace in the Central American FIR. / Estudio para implementar un concepto de espacio aéreo PBN integral para el espacio aéreo inferior y superior en la FIR Centro América	RPOs 1, 2, 3	Alfredo Mondragón		Completed / Finalizada	COCESNA coordinated the implementation of PBN airspace concept with 6 Central American States. / COCESNA coordinó la implementación de un concepto de espacio aéreo PBN con 6 Estados Centroamericanos
PBN training programme for Pilots, ATCOs, operators and regulators. / Programa de Capacitación PBN para Pilotos, ATCOs, operadores y reguladores	RPOs 1	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	States conduct their training programme according to the ICAO PBN Manual, Doc 9613. / Los Estados llevan a cabo su programa de capacitación acorde al Manual PBN, Doc 9613, de la OACI
Evaluate and implement PBN requirements for ATC Automated Systems, according to the new ICAO Flight Plan Form requirements. / Evaluar e implementar los requisitos de los sistemas automatizados ATC acorde a los requisitos del nuevo formulario de plan de vuelo de la OACI	RPOs 1, 3, 4, 5	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	States have completed their action plan for the implementation of the New ICAO flight plan form. / Los Estados han completado su plan de acción para el procesamiento del nuevo formulario del plan de vuelo de la OACI

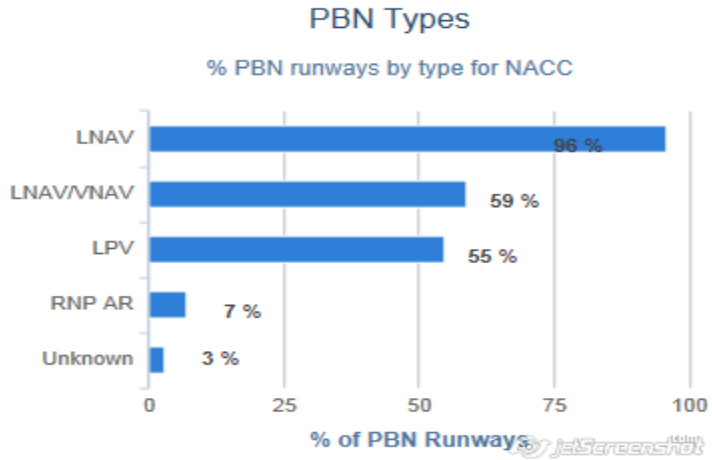
Development of a proposal for amendment of the ATS routes network for the implementation of RNP 10 in the Gulf of Mexico Oceanic area and RNAV 5 for the continental areas. / Elaboración de propuesta de enmienda a la red de rutas ATS para la implementación de RNP 10 en el área oceánica del Golfo de México y RNAV 5 para las áreas continentales	RPOs 1.1	Alfredo Mondragón, Roy Grimes		Completed / Finalizada	The proposal for amendment has been approved and implemented 11 new RNAV Routes. / La propuesta de enmienda ha sido aprobada e implementó 11 nuevas Rutas RNAV
Develop PBN Safety Assessment Programme based on SMS methodology. / Desarrollar un Programa de Evaluación de Seguridad Operacional PBN en base a la metodología del SMS	RPOs 1			Completed / Finalizada	States conduct safety assessment to implement changes in the airspace of their jurisdiction. / Los Estados efectúan una evaluación de la seguridad operacional para los cambios en el espacio aéreo de su jurisdicción
Implementation of random Routes in defined oceanic airspace. / Implantación de rutas aleatorias en espacio aéreo oceánico definido	RPOs 1.1, 3	Trinidad and Tobago		Completed / Finalizada	RNP 10 and Random Routes implemented in the Oceanic area of the WATRS airspace, the Gulf of Mexico, Houston and Miami Oceanic and Piarco FIRs / RNP 10 y Rutas RNAV aleatorias implementadas en el espacio aéreo oceánico WATRS, el Golfo de México y las FIR Houston y Miami Oceanic y Piarco.

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	RPOs 1	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	Current DME infrastructure supports the PBN approach procedures requirements. Regionally was not detected the necessity of more DME infrastructure. States will review their own DME radioaids requirements. / La infraestructura DME actual apoya los requisitos de los procedimientos de aproximación PBN. Regionalmente no se detectó la necesidad de más infraestructura DME. Los Estados analizarán sus propias necesidades de radioayudas DME
Analysis of regional feasibility for SBAS (WAAS/SACSA) implementation. / Estudio de factibilidad regional de la implantación del SBAS (WAAS / SACCSA)	RPOs 1	Alfredo Mondragón assisted by / asistido por SACCSA and/y WAAS		2016	Mexico is testing 5 WAAS stations for domestic use. WAAS requirements will be regionally reviewed in the medium term. 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. / México tiene a prueba 5 estaciones WAAS para uso nacional. Los requisitos WAAS serán regionalmente revisados en el mediano plazo. 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
Practical guidance for the implementation of GBAS Systems/ Guía práctica para la implementación de sistemas GBAS.	RPOs 1	Alfredo Mondragón assisted by / asistido por SACCSA and/y WAAS		2018	

Develop a performance measurement programme. / Desarrollar un programa de medidas de la performance	RPOs 1, 3	ICAO / OACI		Completed / Finalizada	Implementation achievements are presented to the NACC/DCA Meetings. / Los resultados de implementación se presentan a las Reuniones NACC/DCA
Monitor System Performance. / Monitorear la performance del sistema	RPOs 1	ICAO		2015	ICAO NACC Regional Office conducts this activity. / La Oficina Regional NACC de la OACI lleva a cabo esta actividad
Required Resources / Recursos necesarios	CAR Regional Project with the participation of States to support PBN training programme / Proyecto regional CAR con la participación de los Estados para apoyar el programa de capacitación PBN				

Gris	Tarea no iniciada;
Verde	Actividad en progreso de acuerdo con el cronograma;
Amarillo	Actividad iniciada con cierto retardo pero estaría llegando a tiempo en su implantación;
Rojo	No se ha logrado la implantación de la actividad en el lapso de tiempo estimado se requiere adoptar medidas mitigatorias.


Percentage of PBN Runways per State
100
92%
75
50
25
0
2016 Target
2014 Target
2010 Target
Antigua and Barbuda
El Salvador
Nicaragua
Belize
Guatemala
Mexico
Cuba
Costa Rica
Canada
Honduras
Dominican Republic
United States of America
Saint Vincent and the Grenadines
Trinidad and Tobago
Saint Lucia
Saint Kitts and Nevis
Jamaica
Bahamas
Grenada
Barbados
Haiti
STATES (21)


PBN Types
% PBN runways by type for NACC
LNAV
96 %
LNAV/VNAV
59 %
LPV
55 %
RNP AR
7 %
Unknown
3 %
0
25
50
75
100
% of PBN Runways

APPENDIX A2

PBN Implementation in the South American Region

Project A1 "PBN Implementation"

1.1 Regarding GREPECAS Project A1, the SAM/IG/12 meeting (14-18 October 2013) planned a series of deliverables to extend the scope of the Project in accordance with the requirements of SAM/IG/11, with a view to supporting States in the development of their terminal area PBN designs. These proposed deliverables were as follows:

- Prepare and give a course/workshop on terminal area design using PBN.
- Develop the planning strategy for terminal area optimisation, based on harmonisation workshops and use of lessons learned.
- Develop guides for the design, evaluation, and selection of navigation specifications to be applied in TMAs as necessary.
- Develop procedures for verifying and validating the concept and procedures using risk analysis.
- Identify implementation restrictions and develop guides for pre-implementation training.
- Action plan for Version 03 of the SAM ATS Route Optimisation Programme.
- Design the tasks required for the implementation of Version 03 of the SAM ATS Route Optimisation Programme.
- Regional strategy and work programmes for the implementation of the flexible use of airspace through a phased approach, starting with more dynamic sharing of reserved airspace.

1.2 More details about Project A1 for the SAM Region may be found in **Attachment A** to this Appendix.

1.3 The SAM/IG/12 meeting concluded that a broader assessment of the project would be required in order to include RNP 2 (continental airspace) and RNP 4 (oceanic airspace) implementation phases.

PBN Implementation Strategy in the SAM Region

1.4 Taking into account Conclusion SAM/IG/11-1 (*Support to SAM States in the redesign of their TMAs*), it was felt convenient to plan the activities of Project RLA/06/901 for 2014 in order to determine the needs and expand the training of ATM experts of the SAM Region, in order to support and facilitate the regional PBN implementation plan, thus allowing participants to gain more knowledge on PBN application.

1.5 The SAM/IG/12 meeting (Lima, Peru, 14-18 October 2013) agreed that it would be better to conduct the required training in three consecutive phases.

1.6 The first phase consisted of distance training, consisting of basic PBN fundamentals shared through the ICAO website (*http://www.icao.int/safety/pbn/SitePages/PBN%20ikit.aspx*) and the study by each participant of the following PBN-related manuals: PBN Manual (Doc 9613), Manual on the Use of Performance-Based Navigation in Airspace Design (Doc 9992), Continuous Descent Operations Manual (Doc 9931), and Continuous Climb Operations Manual (Doc 9993).

1.7 The second phase consisted of participation in Workshop I on PBN airspace design, which lasted 2 weeks, the purpose of which was to provide theoretical/practical training in PBN terminal area design. For the practical exercise, 1 highly complex TMA (Bogota) and 1 less complex TMA (Asuncion) were selected. In this regard, the First workshop on PBN airspace design in the SAM Region was conducted in Bogota, Colombia, on 12-23 May 2014, sponsored by the Aeronautical Authority of Colombia and with the support of Regional Project RLA/06/901.

1.8 The result of this workshop was the preliminary design of the terminal areas of Asuncion and Bogota, which will serve as reference material for planning, design, and implementation of PBN in their respective States.

1.9 A final exam was taken on the last day of the PBN Workshop 1 in order to identify the level of knowledge gained by the participants during the event. In summary, the results were as follows:

- Average score of the group: 89
- All the participants obtained a good score (70 - 84) or very good score (more than 84).
- None of the participants obtained a final score of less than 72.
- The group average increased 13.5 points (from 75.5 to 89), comparing the first and the final assessments.

1.10 Likewise, a survey was completed to measure the degree of satisfaction of the participants with respect to the workshop and the instructors. The summarised results were as follows:

- 87% of the participants considered that the workshop had been excellent, while 13% considered it had been good.
- 91% of the participants considered that the instructors had been excellent, and 9% considered that they had been good.

1.11 The third phase will consist of Workshop II on PBN airspace design, lasting 1 week, where the participants from the first workshop will present the preliminary basic design of a TMA selected from each State, so that the proposed designs may be harmonised and optimised during the workshop using the techniques learned during the first workshop. The participants will also seek to integrate the entry/exit points of these TMAs with a view to producing Version 03 of the SAM route network. The second workshop on PBN airspace design in the SAM Region will be conducted on 8-12 September 2014 at the ICAO SAM Regional Office.

1.12 Once the aforementioned 3 phases of the Training Programme have been completed, Regional Project RLA/06/901 will hire three experts for a period of 3 weeks to develop a draft Version 03 of the SAM route network based on the entry/exit points of the main South American TMAs as defined at the PBN Workshop 2.

1.13 Based on the draft Version 03 of the SAM route network, the sixth SAM ATS Route Network Optimisation meeting (ATSRO/6) will be held on 20-24 October 2014, whose main objectives will be to assess the status of Version 03 of the SAM route network and continue with the ATS route implementation, realignment, and elimination programme.

1.14 The SAM/IG/14 meeting, scheduled for 3-7 November 2014, will assess the progress made by the PBN Programme and will plan the implementation for 2014-2016, based on the preliminary PBN designs for the main TMAs produced during the PBN Workshops 1 and 2, and of Version 03 of the SAM route network. It is expected that implementation will be based on the PBN airspace design workshops and bilateral and multilateral meetings aimed at defining the necessary details for TMA and en-route implementation.

SAM Route Network Optimisation Programme

1.15 The SAM Route Network Optimisation Programme, as planned by the SAM/IG meetings and executed by the SAM ATS Route Network Optimisation (ATSRO) meetings, showed the following progress:

a) Route UM662 was finally implemented to optimise the Guayaquil-Madrid route that was pending since the beginning of the Programme. Based on 160 monthly operations along this route (60 B767 operations, 60 A340 operations, and 40 B777 operations), the IFSET tool has calculated initial annual savings of **730.800 kg of fuel** and an annual reduction of **2.307 tonnes of CO_2** since the date of its implementation on 17 October 2013.

b) During the 2001-2012 period, CO_2 emissions into the atmosphere were reduced by approximately 134.460 tonnes per year, a conservative estimate that does not consider the reduction in CO_2 emissions obtained from RVSM implementation in the SAM Region in 2005.

c) Regarding the first implementation stage of Version 02, two dates were defined for two different groups of routes. For the first date, 2 new RNAV routes were selected and 11 routes were realigned, some segments of which were eliminated to make them more direct and save a total of 123 NM in 1151 monthly operations, mainly with B 737, A 320, and B767 aircraft. Using the IFSET tool, a total of **11.760.000 kg of fuel per year** and a reduction of **37.161 tonnes of CO_2** per year were calculated as of the date of implementation.

d) With the early implementation of route UM662 and the implementation of the first stage of phase 3, Version 02 of the ATSRO Programme, **an annual reduction of 39.468 tonnes of CO_2** has been achieved.

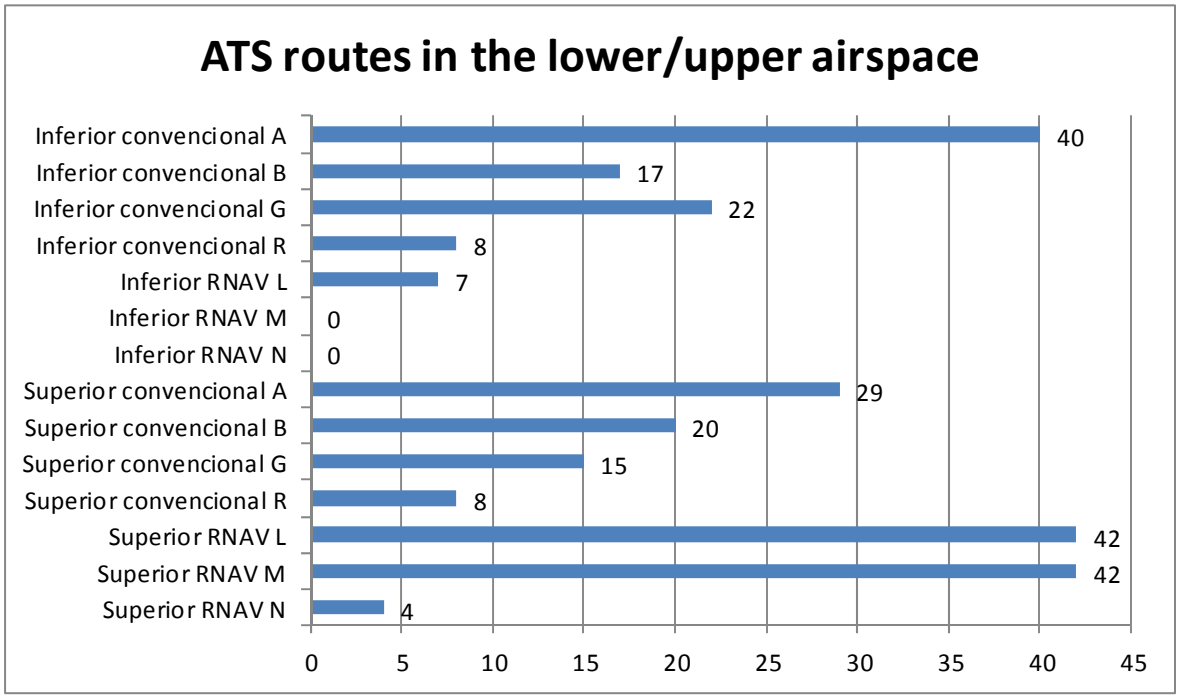
e) With the realignment of route UM 548 and the implementation of route UN775, **a reduction of 14,295 tonnes of CO_2** was achieved during the **first** semester of 2014.

Period selected	Reduction of CO_2 emissions in tonnes
2001 to 2012	**134,460**
2013	**39,468**
1st semester of 2014	**14,295**

1.16 The following table shows the optimisation achieved to date within the framework of the ATSRO Programme:

Route Optimisation in the South American Region			
Phase/Version	**Status of implementation**	**Date**	**Optimisation**
Phase 1 - RNAV-5	Implemented	October 2011	77 new RNAV routes 58 routes optimised 7 routes eliminated
Phase 2 - Version 01	Implemented	March 2011	15 new routes 19 routes optimised 18 routes eliminated
Phase 3 - Version 02	Stage 1	October 2013	1 RNAV route UM662
		December 2013	2 new routes 11 routes optimised 4 segments eliminated
		June 2014	2 routes optimised
	Stage 2	November 2014	18 candidate routes under study

1.17 The following graph shows the number of conventional ATS and PBN routes in the lower and upper airspace of the SAM Region:



1.18 In summary, out of the 254 routes that make up the regional ATS route network, 159 (62%) are conventional routes and 95 (38%) are PBN routes.

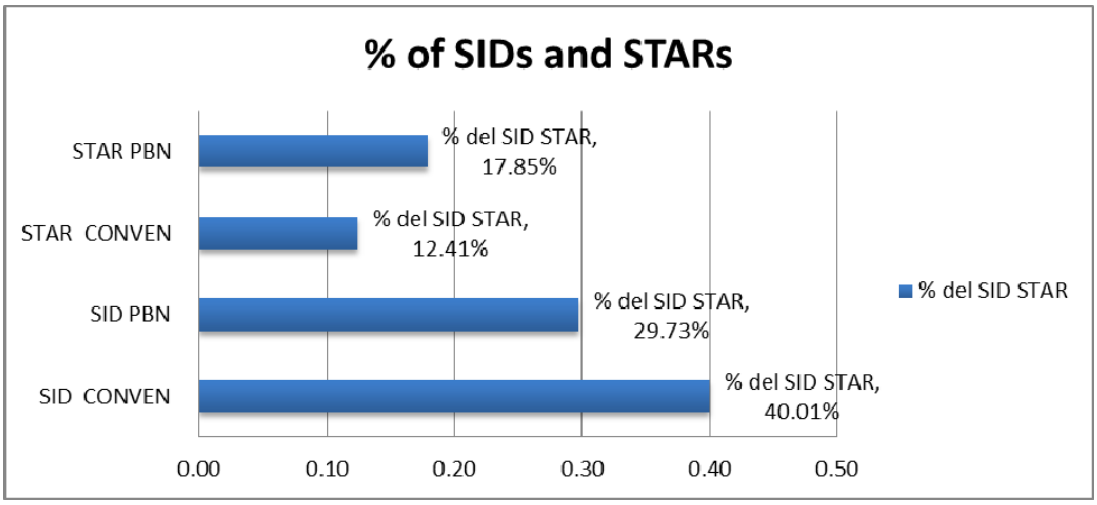
Status of Implementation of Standard Arrivals and Departures (STAR y SID) in the SAM Region

1.19 The SAM/IG/12 meeting took note of the following information concerning standard arrivals and departures:

a) Regarding standard arrival procedures (STARs), out of a total of **512 procedures**, 210 are conventional procedures (41%) and 302 are procedures developed based on the PBN concept (59%);

b) Regarding standard departure procedures (SIDs), it was noted that out of **1180 procedures**, **677** are conventional procedures (57%) and 503 are procedures developed based on the PBN concept (43%).

1.20 The following figure shows the different SID and STAR categories in graphical form:



1.21 In summary, a total of 1680 STAR and SID procedures have been designed and published for 99 international airports of the SAM Region, of which 878 (52%) are conventional procedures and 802 (48%) are based on the PBN concept.

Total number of airports	Total SIDs/STARs	Total number of PBN SIDs/STARs	ICAO indicator % PBN SIDs/STARs
99	1680	805	**48 %**

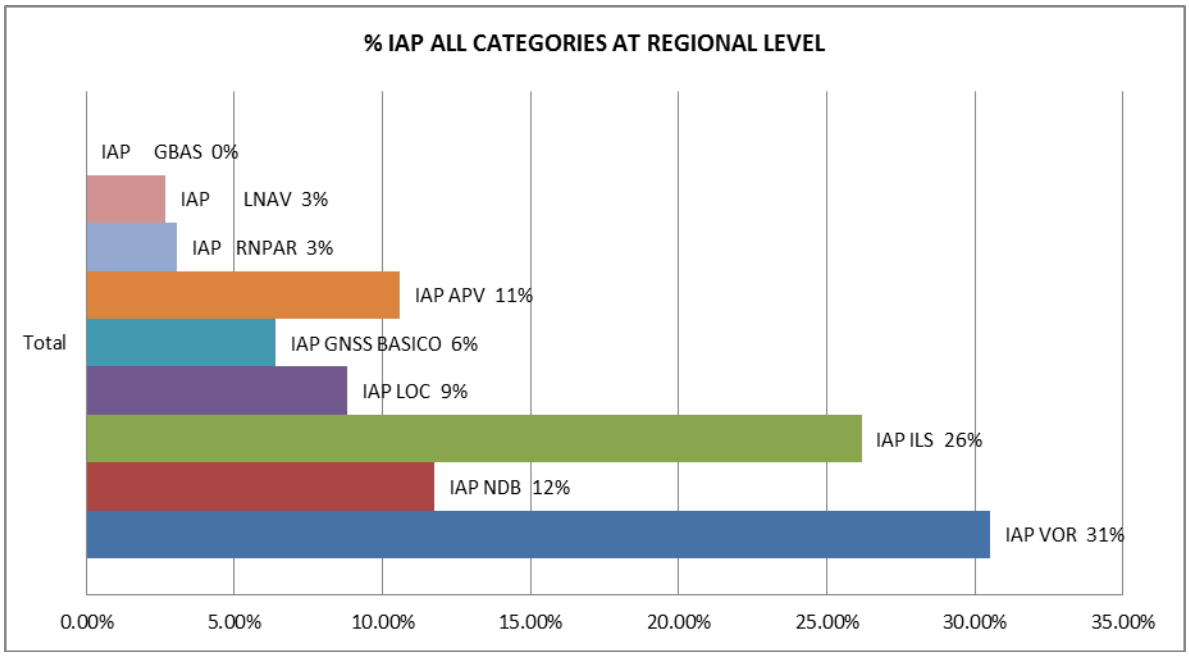
PBN Instrument Approach Procedures

1.22 The SAM/IG/12 meeting took note of the status of implementation of IFR approach procedures, where 783 approach procedures had been designed and published for 99 international airports.

1.23 The following breakdown identifies the number and percentage of procedures based on the categories analysed:

IAP percentage	VOR IAP	NDB IAP	ILS IAP	LOC IAP ONLY	BASIC GNSS IAP	RNP APCH VNAV / LNAV IAP	RNPAR IAP	RNP APCH LNAV IAP ONLY	GBAS IAP
Total	239	92	205	69	50	83	24	21	0
% of IAP	30.5	11.7	26.2	8.8	6.4	10.6	3.1	2.7	0

1.24 The following figure illustrates all IAP categories at regional level:



1.25 Of the total number of procedures, 77% (605) have been designed based on conventional radio aids (NDB, VOR, DME, LOC, ILS), while 23% (178) have been designed based on PBN. In this case, LNAV, RNP AR, APV procedures have been considered, including basic GNSS. In the SAM Region, GBAS IAPs have not been published yet for international aerodromes.

1.26 In the SAM Region, there are 783 approach procedures for 99 airports, 178 of which are PBN approach procedures, including GNSS IAPs, 107 of which (14%) are RNP APCH, distributed as follows: 83 APV Baro-VNAV (APV) procedures (11%) and 24 RNP procedures with authorisation required (RNP AR) (3%), as shown in the following table:

Total number of airports	Total IAPs	Total PBN IAPs	Total RNP APCH IAPs	% RNP APCH IAPs of total IAPs	ICAO indicator: % of aerodromes with APV
99	783	178	83 APV Baro VNAV	11%	**14%**
			24 RNP AR	3%	

1.27 Likewise, according to Assembly Resolution A37-11, instrument procedures have been developed to 175 of the 228 thresholds that exist for the 114 runways in the SAM Region. For these 175 thresholds, 107 APV procedures have been implemented, accounting for 61% of IFR runways.

Total runways	Total IFR runways	Total APV IAPs	ICAO indicator: A37-11 % APV for IFR runways
114	175	107	**61%**

PBN Implementation in SAM States

Brazil

1.28 The SIRIUS programme of Brazil is an important en-route and TMA airspace restructuring project that applies the PBN concept to optimise air traffic flow between the main terminal control areas (TMAs) of Brazil. The project consisted in the restructuring of the route network within the polygon that encompasses the TMAs of Vitoria, Belo Horizonte, Brasilia, Sao Paulo (SP), and Rio de Janeiro (RJ), covering a total surface of 250,000 SQ.NM.

1.29 Project implementation was divided into two phases: restructuring of routes (first phase) and restructuring of the TMAs of RJ and SP (second phase).

1.30 The first phase was implemented in 2012 with the restructuring of 5 RNAV routes and the adoption of additional parallel routes. SID/STAR procedures had to be adjusted to the new routes. Approximately 250 procedures were amended.

1.31 For the second phase (implemented in late 2013), new procedures were published for the RJ and SP TMAs and air traffic flow was completely reorganised with the creation of new arrival and departure sectors for these TMAs.

- 43 routes were created or realigned;
- 198 new SIDs/STARs were published; and
- Approximately 650 procedures were published or modified during a period of three years.

1.32 The project also incorporated the concept of conditioned flexible use of airspace during the night or during periods of inactivity, resulting in a significant reduction of the distance flown (between 30 and 50 NM) in the different portions of the affected airspace.

1.33 Other benefits of the SIRIUS programme include:

- Implementation of RNP APCH (Baro/VNAV) and RNP AR APCH procedures for the five largest airports in both TMAs, resulting in enhanced safety, efficiency and airport access;

- Creation of new control sectors in APP and ACC areas for approaches and departures, which improved the traffic flow and increased ATC capacity;

- A total reduction of approximately 930 NM in miles flown, resulting in annual savings of 203.000 metric tonnes of fuel. In terms of the environment, this represents a reduction of 630.000 tonnes of CO_2 per year; and

- Significant noise reduction through stabilized descents and paths projected over oceanic and unpopulated areas.

1.34 The success of the programme may be directly attributed to collaborative decision-making (CDM), involving more than 1,000 officials from all the areas concerned.

Chile

PAMPA Project

1.35 The main objective of the PAMPA project – Route optimisation in Chile, is to connect the busiest city pairs in the country through more direct routes, laterally separated from other routes and which permit the establishment of TMA entry/exit flows and climbs and descents with minimum restrictions.

1.36 The project had the following characteristics:

a) The RNAV airways between Arica and Santiago were optimised.
b) The conventional routes were not modified.
c) Bidirectional airways were established between pairs.
d) SIDs and STARs were segregated.
e) 64 procedures (SIDs, STARs) were modified and/or created.
f) CDOs and CCOs were considered.
g) Departures with different requirements were designed in SCEL.
h) LAN flight simulators were used for validating some procedures.
i) Time to implementation: 18 months.

1.37 Since 2009, the DGCA of Chile, together with LAN, has been conducting an RNP AR procedure design and implementation programme at various airports and aerodromes of the country. The publication of these procedures has been aimed at improving accessibility (lower approach minima), safety (through the inclusion of procedures with vertical guidance to reduce CFIT events), and reducing emissions throughout the country, since RNP AR procedures permit shorter paths and optimised descent profiles that reduce fuel consumption and, consequently, emissions.

1.38 To date, 10 RNP AR procedures have been published for the Iquique, Antofagasta, Calama, Concepcion, La Serena, Santiago, Temuco, Valdivia, Osorno, and Balmaceda airports.

1.39 Data captured by LAN during 2012 show that the RNP project reduced fuel consumption by 250 mil Gal (equivalent to 757 mil Kg of fuel) during this period, corresponding to 2.413 tonnes of CO_2 not released into the atmosphere.

Peru

1.40 The SAM/IG/12 meeting was pleased to note that, as a result of the PBN airspace design workshop conducted in March 2013 in Miami, and within the framework of the SAM airspace optimisation programme, Peru started the **Airspace reorganisation and performance-based navigation implementation programme - PROESA /PBN** in June of this year, an initiative that is aligned with the pre-publication of ICAO Doc 9992 "*Manual on the use of performance-based navigation in airspace design*", which sets forth an agile methodology for the implementation of PBN airspace in 4 phases divided into 17 activities.

1.41 The **PROESA** programme considers the participation of the ATM community and the national industry, as well as of international organisations, professional associations, and users in general.

1.42 During the first stage of diagnosis and planning, the DGCA, CORPAC, and air operators represented by IATA and LAN PERU are working together. The objective of this first stage is to restructure the Lima TMA, the Cusco TMA and the Lima-Cusco-Lima corridor, which is the most congested at present, foreseeing its implementation for the second quarter of 2014.

1.43 This reorganisation will be aligned and harmonised with regional route enhancement initiatives currently under way, and will expedite the implementation of RNAV/RNP procedures at the aerodromes of the country, as well as continuous descent/climb (CDO/CCO) operations.

1.44 Finally, **PROESA** will offer a new structure with more efficient routes, with less climb/descent restrictions, both en-route and at the TMAs, reducing pilot and controller workload, seeking to reduce the need for vector guidance by virtue of RNAV paths, decongesting frequencies and giving pilots and controllers more time to perform their respective activities, increasing situational awareness, upon transferring navigation to database coding of optimum flight paths.

ATTACHMENT A TO APPENDIX B

PBN OPERATIONAL IMPLEMENTATION PROJECT

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° A1	
Programme	**Title of the Project**	**Start**	**End**
PBN (Programme Coordinator: Julio Pereira)	PBN Operational Implementation *Project Coordinator: Alexandre Luiz Dutra Bastos (Brazil)*	2011	2018
Objective	Support the optimisation of the South American airspace structure through the optimisation of the ATS route structure in terminal (RNAV/RNP SIDs/STARs) and en-route (RNAV/RNP) airspace, as well as the implementation of PBN approaches pursuant to ICAO Assembly Resolution A37-11.		
Scope	The implementation project contemplates the optimisation of the South American airspace through the implementation of PBN and the application of the flexible use of airspace (FUA) concept, as well as the phased optimisation of the ATS route network of the region.		
Metrics	• Reduction of CO_2 emissions in tonnes for each route optimisation version. • Percentage of RNAV and/or RNP SIDs/STARs implemented at international airports. • Percentage of continuous descent and climb operations implemented at international airports. • Number of RNAV/RNP routes implemented, realigned and/or eliminated.		
Strategy	The conduction of project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly at SAM/IG meetings. The Project Coordinator will coordinate with the Programme Coordinator the inclusion of additional experts, if warranted by the tasks and works to be executed. Furthermore, the States must check their respective national RNAV route implementation programme for consistency with the SAM RNAV implementation programme. Activities involving the review, implementation, modification, or elimination of routes in the SAM Reigon are foreseen in order to continue with the optimisation of the ATS route structure.		

Goals	• Compliance with goals established by ICAO Assembly Resolution A37-11 regarding approach procedures with vertical guidance (APV); • 60% of international aerodromes using PBN standard instrument departures (SID) / standard instrument arrivals (STAR) by 2016; • 60% of routes/airspaces with performance-based navigation (PBN) by 2016; • 40% of international aerodromes /terminal control areas (TMA) with continuous descent operations (CDO) by 2016; • 40% of international aerodromes /terminal control areas (TMA) with continuous climb operations (CCO) by 2016;
Rationale	The 36th and 37th ICAO General Assemblies requested the Council to encourage Contracting States to improve air traffic efficiency resulting in emission savings, to report the progress made in this field, and to expedite the development and implementation of routings and procedures that will permit efficient fuel burn to reduce aviation emissions.
Related projects	• Automation. • Air navigation systems in support of PBN. • Enhance demand and capacity balancing.

Project deliverables	Relationship with the performance-based regional plan	Responsible party	Status of Implemen-tation*	Delivery date	Comments
Implementation of version 01 of the ATS route network, based on RNAV, with the necessary PBN values to meet current requirements of airspace users.	PFF SAM ATM 01	Alexandre Luiz Dutra Bastos		October 2010	**FINALISED**
Implementation of RNAV5 in the SAM Region.	PFF SAM ATM 01	Alexandre Luiz Dutra Bastos		October 2011	**FINALISED**
Action plan for the implementation of version 02 of ATS route network optimisation.	PFF SAM ATM 01	Alexandre Luiz Dutra Bastos		ATS/RO/3	**FINALISED**
Traffic data to understand airspace traffic flows.	PFF SAM ATM 01	ICAO coordinator		SAM/IG/6	**FINALISED**
Fleet navigation capacity.	PFF SAM ATM 01	Alexandre Luiz Dutra Bastos		SAM/IG/9	**FINALISED**

Project deliverables	Relationship with the performance-based regional plan	Responsible party	Status of Implemen-tation*	Delivery date	Comments
Listing of gateways of the main TMAs in the SAM Region.	PFF SAM ATM 02	Alexandre Luiz Dutra Bastos		SAM/IG/9	Few States have provided the data requested. The SAM/IG/11 meeting agreed to support States in the design of their TMAs so as to expedite PBN implementation.
Letters of Agreement and Contingency with adjacent States	PFF SAM ATM 01	Alexandre Luiz Dutra Bastos		SAM/IG/10	**FINALISED**
Detailed study of the SAM ATS route network, route network version 02	PFF SAM ATM 01	Alexandre Luiz Dutra Bastos		April 2012	**FINALISED**
Risk analysis for the implementation of Version 02 of the ATSRO Programme	PFF SAM ATM 01	External consultants		SAM/IG/10	**FINALISED**
"*Airspace Modelling*" studies and Fast-Time Simulation to assess the scenarios developed in the detailed study of the SAM ATS route network.	PFF SAM ATM 01	Alexandre Luiz Dutra Bastos		December 2014	This task is subject to the availability of Brazilian technical support and facilities in Jose dos Campos
Develop the terminal area optimisation planning strategy		SAM/IG/12		October 2013	Complete training of experts with two courses/workshops on airspace planning

Project deliverables	Relationship with the performance-based regional plan	Responsible party	Status of Implemen-tation*	Delivery date	Comments
Prepare and conduct a course/workshop on the design of terminal areas applying PBN		ICAO instructors		May 2014	Bogota and Asuncion TMAs
Develop a workshop for the analysis on the design of terminal applying PBN in the rest of participant States		ICAO instructors		September 2014	At least 1 TMA in each participant State
Develop guides for the design, assessment, and selection of the navigation specification to be applied in TMAs where required		External consultant		2014-2016	
Develop concept verification and validation and risk analysis procedures		External consultant		2014-2016	
Identify implementation restrictions and develop guides for pre-implementation training		External consultant		2014-2016	

Project deliverables	Relationship with the performance-based regional plan	Responsible party	Status of Implemen-tation*	Delivery date	Comments
Plan of action for Version 03 of the SAM ATS route optimisation programme		External consultant		October 2015	
Design the necessary tasks for the implementation of version 03 of the SAM ATS route optimisation programme		External consultant		2016-2018	
Regional strategy and work programme for the implementation of the flexible use of airspace, applying a phased approach, starting with a more dynamic sharing of reserved airspace		External consultant		2013-2018	
Resources required	Designation of experts in the execution of some of the deliverables.				

*

Grey	Task not started
Green	Activity underway as scheduled
Yellow	Activity started with some delay but expected to be completed on time
Red	It has not been possible to implement this activity as scheduled; mitigating measures are required

APPENDIX B1 / APENDICE B1

PROJECT IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN)
PROYECTO IMPLANTACIÓN DE LA NAVEGACION BASADA EN LA PERFORMANCE (PBN)

CAR Region / Región CAR	**PROJECT DESCRIPTION / DESCRIPCION DEL PROYECTO (DP)**	**DP N° A1**	
Programme / Programa	**Project Title / Titulo del Proyecto**	**Start / Fecha inicio**	**End / Fecha término**
Performance Based Navigation /Navegación basada en la performance (PBN) Programme Coordinator / Coordinador del Programma: Victor Hernandez)	*Performance Based Navigation / Navegación Basada en la Performance (PBN)* Project Coordinator / Coordinador Proyecto: Alfredo Mondragón (COCESNA) Exoerts / Expertos contribuyentes: Carl Gayner (Jamaica) Jose Gil (México) Jose Perez (Dominican Republic) Randy Gomez (Trinidad and Tobago) Susan E. Pfingstler (IATA)	2008	2015
Objective /Objetivo	Support the implementation of the ATS route structure in terminal areas (SID/STAR RNAV) and en-route (RNAV) optimization Project, as well as the implementation of RNP approach procedures according to regional performance objectives of the Performance-based Implementation Plan for NAM/CAR (RPBANIP NAM/CAR) Regions. / Apoyar la implementación del proyecto de optimización de la estructura de rutas ATS en el espacio aéreo terminal (SID/STAR RNAV) y en ruta (RNAV), así como la implantación de aproximaciones RNP en base a los Objetivos regionales de performance del Plan de Implementación Basada en la Performance para las Regiones NAM/CAR (RPBANIP NAM/CAR)		
Scope /Alcance	Progressive implementation of PBN and use of GNSS according to the goals of Assembly Resolution A37-11 and the PBN Airspace Concept for the CAR Region. / Implantación progresiva de la PBN y uso del GNSS acorde a las metas de la Resolución de la Asamblea A37-11 y el Concepto de Espacio Aéreo PBN para la Región CAR.		

Metrics / Métricas	• Percentage of instrument runway ends with an approach procedure with vertical guidance (APV), (BARO-VNAV and/or augmented GNSS) either as the primary approach or as a back-up for precision approaches; • Percentage of international aerodromes with implanted SID/STAR RNAV, RNP and continuous descent and climb operations (CDO/CCO); • Estimated fuel saved with operational improvements. / • Porcentaje de final de pistas por instrumentos con un procedimiento de aproximación con guía vertical (APV), (BARO-VNAV y/o aumentación GNSS) sea como aproximación primaria o como apoyo para aproximaciones de precisión; • Porcentaje de aeropuertos internacionales con SID/STAR RNAV, RNP y operaciones de descenso y ascenso continuo (CDO/CCO) implantados; • Ahorros estimados de combustible por mejoras operacionales.
Strategy / Estrategia	The implementation of activities will be coordinated between Project members, the Project Coordinator and the Programme Coordinator. The Programme Coordinator will coordinate with the Project Coordinator requirements of other projects and NAM/CAR implementation working groups. States will develop their respective national programmes of implementation of routes and approach procedures according to PBN Airspace Concept in the CAR Region. Experts nominated by States, Territories and International Organizations will be incorporated to develop tasks as required. / La ejecución de las actividades será coordinada entre miembros del proyecto, el coordinador del proyecto y el Coordinador del Programa. El Coordinador del Programa coordinará con el Coordinador del Proyecto los requerimientos de otros proyectos y Grupos de Trabajo de implementación NAM/CAR. Los Estados elaborarán sus respectivos programas nacionales de implantación de rutas y procedimientos de aproximación acorde al Concepto de Espacio Aéreo PBN de la Región CAR. Se incorporarán expertos nominados por los Estados, Territorios y Organizaciones Internacionales para desarrollar las tareas, según se requiera.
Goals / Metas	• Implement RNAV/RNP routes and RNP approach procedures according to Assembly Resolution A37-11 in 2016: • Implement a PBN airspace concept (CDOs, CCOs, SIDs, STARs, RNAV/RNP route and RNP approach procedures) in 8 FIRs by end of 2014: • Analyze VOR. DME/DME infrastructure requirements for RNP approach procedures. / • Implementar rutas RNAV/RNP y procedimientos de aproximación RNP de acuerdo a la Resolución de la Asamblea A37-11, en 2016; • Implementar un concepto de espacio aéreo PBN (CDOs, CCOs, SIDs, STARs, rutas RNAV/RNP y procedimientos de aproximación RNP) en 8 FIRs a fines de 2014; • Analizar los requisitos de infraestructura VOR, DME/DME para procedimientos de aproximación RNP.

Justification/ Justificación	The Assembly Resolution A37-11, performance-based navigation (PBN) global goals, urged States to implement RNAV and RNP ATS routes and approach procedures in accordance with the ICAO Performance-based Navigation (PBN) Manual, Doc 9613, and requested the PIRGs to include in their work programme the review of status of implementation of PBN by States according to the defined implementation plans and report annually to ICAO any deficiencies that may occur. In addition, NAM/CAR States adopted a regional performance framework on the basis of the regional performance objectives (RPO) of the performance based air navigation implementation plan (RPB-ANIP) for NAM/CAR Regions and the Global ATM Operational Concept. The performance framework includes the implementation of a set of performance common metrics to facilitate comparative analysis of overall regional development, such as operational and economic cost-effectiveness of gate-to-gate flight operations, and the protection of the environment in the planning, implementation and operation processes of the global ATM system. / La Resolución A37-11 de la Asamblea, metas mundiales de navegación basada en performance (PBN), instó a los Estados a implantar rutas ATS RNAV y RNP, así como procedimientos de aproximación de acuerdo al Manual de la OACI sobre Navegación Basada en la Performance (PBN), Doc 9613, solicitando a los PIRGs incluir en sus programas de trabajo la revisión del estado de implantación de PBN por los Estados, de acuerdo a los planes de implantación definidos e informar anualmente a la OACI sobre cualquier deficiencia que pudiera ocurrir. Adicionalmente, los Estados NAM/CAR adoptaron un marco regional de performance en base a los objetivos regionales de performance (RPO) del plan de implantación de navegación basada en performance (RPB-ANIP) para las Regiones NAM/CAR y el Concepto Global de Operación ATM. El marco de performance incluye la implantación de un conjunto de métricas de performance comunes para facilitar el análisis comparativo del desarrollo regional en general, tales como el costo-efectividad operacional y económico de operaciones aéreas puerta a puerta y la protección del medio ambiente en los procesos de planificación, implantación y operación del sistema ATM global.
Related Projects / Proyectos relacionados	• Enhance demand and capacity balancing; • Flexible use of airspace; • Improve ATM Situational awareness; • Implement the New ICAO Flight Plan Form. • Mejorar el equilibrio entre la demanda y capacidad; • Uso flexible del espacio aéreo; • Mejorar la Conciencia Situacional ATM; • Implementación del Nuevo Formato de Plan de Vuelo de la OACI.

Entregables del Proyecto	Relación con el RPB-ANIP NAM/CAR	Responsable	Estado de Implantación*	Fecha entrega	Comentarios
PBN Airspace Concept / Concepto de Espacio Aéreo PBN	RPOs 1, 2, 3	Alfredo Mondragón		Completed / Finalizada	Developed a comprehensive PBN Airspace Concept, in order to implement a trunk route network to/from city pairs in the upper and lower airspace. / Se elaboró un concepto del espacio aéreo PBN integral para implantar una red de rutas troncales desde-hacia pares de ciudades en el espacio aéreo superior e inferior
Optimize the ATS route structure based on RNAV-5 implementation in the upper continental airspace . / Optimizar la estructura de rutas ATS en base a la implementación de RNAV 5 en el espacio aéreo superior continental	RPOs 1.1	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	RNAV 5 Routes implemented in the upper airspace. / Rutas RNAV 5 implantadas en el espacio aéreo superior.
Implement SIDs/STARS, CDO and CCO in terminal areas based on RNAV/1-2 and RNP1 navigation specifications. / Implementar SIDs/STARS, CDO y CCO en áreas terminales en base a especificaciones de navegación RNAV/1-2 y RNP1	RPOs 1.2	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	-211 SIDs implemented /implementadas -145 STARs implemented /implementadas -Implemented STARs /SIDs meet CDO/CCO criteria. / Las STARs / SIDs implementadas cumplen con criterios CDO/CCO.

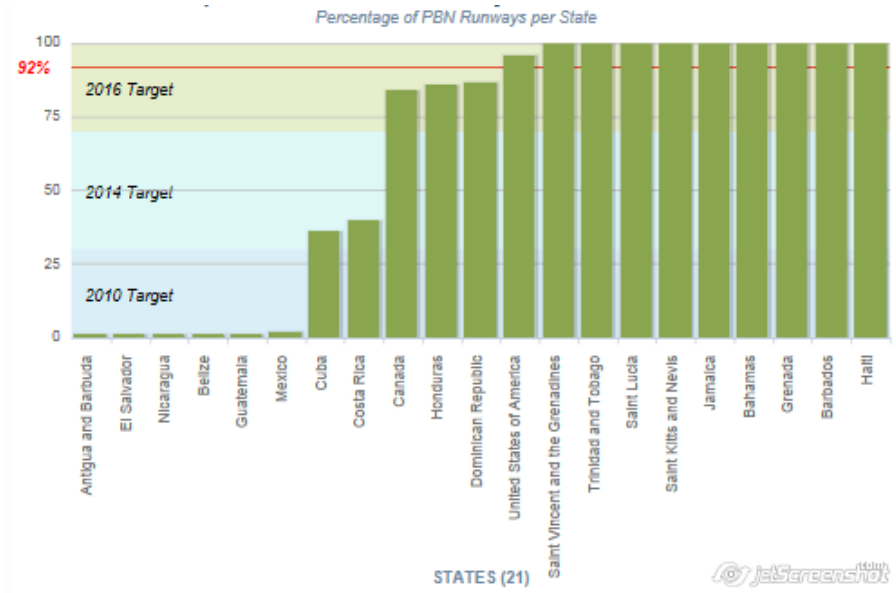
Design and implement PBN APV approach procedures in accordance with Assembly Resolution A37-11 (BARO-VNAV), / Diseñar e implementar procedimientos de aproximación PBN APV (BARO-VNAV) según la Resolución de la Asamblea A37-11	RPOs 1.3	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		2014	152 RNP approach procedures implemented. / 152 procedimientos de aproximación RNP implementados.
Analysis to implement a comprehensive PBN airspace concept for the lower and upper airspace in the Central American FIR. / Estudio para implementar un concepto de espacio aéreo PBN integral para el espacio aéreo inferior y superior en la FIR Centro América	RPOs 1, 2, 3	Alfredo Mondragón		Completed / Finalizada	COCESNA coordinated the implementation of PBN airspace concept with 6 Central American States. / COCESNA coordinó la implementación de un concepto de espacio aéreo PBN con 6 Estados Centroamericanos
PBN training programme for Pilots, ATCOs, operators and regulators. / Programa de Capacitación PBN para Pilotos, ATCOs, operadores y reguladores	RPOs 1	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	States conduct their training programme according to the ICAO PBN Manual, Doc 9613. / Los Estados llevan a cabo su programa de capacitación acorde al Manual PBN, Doc 9613, de la OACI
Evaluate and implement PBN requirements for ATC Automated Systems, according to the new ICAO Flight Plan Form requirements. / Evaluar e implementar los requisitos de los sistemas automatizados ATC acorde a los requisitos del nuevo formulario de plan de vuelo de la OACI	RPOs 1, 3, 4, 5	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	States have completed their action plan for the implementation of the New ICAO flight plan form. / Los Estados han completado su plan de acción para el procesamiento del nuevo formulario del plan de vuelo de la OACI

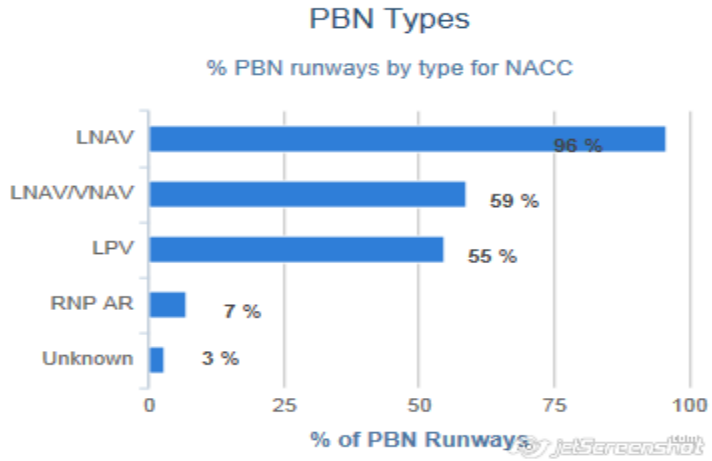
Development of a proposal for amendment of the ATS routes network for the implementation of RNP 10 in the Gulf of Mexico Oceanic area and RNAV 5 for the continental areas. / Elaboración de propuesta de enmienda a la red de rutas ATS para la implementación de RNP 10 en el área oceánica del Golfo de México y RNAV 5 para las áreas continentales	RPOs 1.1	Alfredo Mondragón, Roy Grimes		Completed / Finalizada	The proposal for amendment has been approved and implemented 11 new RNAV Routes. / La propuesta de enmienda ha sido aprobada e implementó 11 nuevas Rutas RNAV
Develop PBN Safety Assessment Programme based on SMS methodology. / Desarrollar un Programa de Evaluación de Seguridad Operacional PBN en base a la metodología del SMS	RPOs 1			Completed / Finalizada	States conduct safety assessment to implement changes in the airspace of their jurisdiction. / Los Estados efectúan una evaluación de la seguridad operacional para los cambios en el espacio aéreo de su jurisdicción
Implementation of random Routes in defined oceanic airspace. / Implantación de rutas aleatorias en espacio aéreo oceánico definido	RPOs 1.1, 3	Trinidad and Tobago		Completed / Finalizada	RNP 10 and Random Routes implemented in the Oceanic area of the WATRS airspace, the Gulf of Mexico, Houston and Miami Oceanic and Piarco FIRs / RNP 10 y Rutas RNAV aleatorias implementadas en el espacio aéreo oceánico WATRS, el Golfo de México y las FIR Houston y Miami Oceanic y Piarco.

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	RPOs 1	States, Territories, International Organizations / Estados, Territorios, Organizaciones Internacionales		Completed / Finalizada	Current DME infrastructure supports the PBN approach procedures requirements. Regionally was not detected the necessity of more DME infrastructure. States will review their own DME radioaids requirements. / La infraestructura DME actual apoya los requisitos de los procedimientos de aproximación PBN. Regionalmente no se detectó la necesidad de más infraestructura DME. Los Estados analizarán sus propias necesidades de radioayudas DME
Analysis of regional feasibility for SBAS (WAAS/SACSA) implementation. / Estudio de factibilidad regional de la implantación del SBAS (WAAS / SACCSA)	RPOs 1	Alfredo Mondragón assisted by / asistido por SACCSA and/y WAAS		2016	Mexico is testing 5 WAAS stations for domestic use. WAAS requirements will be regionally reviewed in the medium term. 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. / México tiene a prueba 5 estaciones WAAS para uso nacional. Los requisitos WAAS serán regionalmente revisados en el mediano plazo. 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
Practical guidance for the implementation of GBAS Systems/ Guía práctica para la implementación de sistemas GBAS.	RPOs 1	Alfredo Mondragón assisted by / asistido por SACCSA and/y WAAS		2018	

Develop a performance measurement programme. / Desarrollar un programa de medidas de la performance	RPOs 1, 3	ICAO / OACI		Completed / Finalizada	Implementation achievements are presented to the NACC/DCA Meetings. / Los resultados de implementación se presentan a las Reuniones NACC/DCA
Monitor System Performance. / Monitorear la performance del sistema	RPOs 1	ICAO		2015	ICAO NACC Regional Office conducts this activity. / La Oficina Regional NACC de la OACI lleva a cabo esta actividad
Required Resources / Recursos necesarios	CAR Regional Project with the participation of States to support PBN training programme / Proyecto regional CAR con la participación de los Estados para apoyar el programa de capacitación PBN				

Gris	Tarea no iniciada;
Verde	Actividad en progreso de acuerdo con el cronograma;
Amarillo	Actividad iniciada con cierto retardo pero estaría llegando a tiempo en su implantación;
Rojo	No se ha logrado la implantación de la actividad en el lapso de tiempo estimado se requiere adoptar medidas mitigatorias.


Percentage of PBN Runways per State
100
92%
75
50
25
0
2016 Target
2014 Target
2010 Target
Antigua and Barbuda
El Salvador
Nicaragua
Belize
Guatemala
Mexico
Cuba
Costa Rica
Canada
Honduras
Dominican Republic
United States of America
Saint Vincent and the Grenadines
Trinidad and Tobago
Saint Lucia
Saint Kitts and Nevis
Jamaica
Bahamas
Grenada
Barbados
Haiti
STATES (21)


PBN Types
% PBN runways by type for NACC
LNAV
LNAV/VNAV
LPV
RNP AR
Unknown
96 %
59 %
55 %
7 %
3 %
0
25
50
75
100
% of PBN Runways

APPENDIX B2

PROJECT B1: IMPROVE DEMAND/CAPACITY BALANCING

PROJECT DESCRIPTION (DP)		DP N° B1	
Programme	**Title of the Project**	**Start**	**End**
Air traffic flow management (ATFM) *(Programme Coordinator Julio Pereira)*	*Improve demand/capacity balancing* *Project Coordinator: There is no coordinator*	2012	2014
Objective	Avoid overloading the ATC and airport systems, while strengthening safety, taking into account the reduction in the number of delays caused by meteorological and traffic conditions, thus reducing fuel consumption and contaminating emissions. Likewise, improve prediction and management of surplus demand for services in ATC sectors and aerodromes.		
Scope	The scope of this project establishes that ATFM implementation should start with airport and airspace monitoring in order to identify significant increases in ground delays and in-flight holding, as well as bottlenecks (ATC sector, runway, apron, and airport facilities). Furthermore, capacity calculation and air traffic demand analysis are important elements to improve demand/capacity balancing.		
Metrics	• % of States that have calculated runway and ATC sector capacity. • % of States that have implemented ATFM in flow management units (FMU) or flow management positions (FMP).		

Strategy	Project execution defines ATFM implementation in the SAM Region through an airspace demand and capacity analysis, taking into account that States that are in the process of implementation shall coordinate with the ATM community to define the actions required for ATFM implementation. The infrastructure and the database, as well as the policy, standards, and procedures, are important components for the execution of this Project.
Goals	• 100% of Area Control Centres (ACCs) are providing Air Traffic Flow Management (AFTM) service. • 100% of International Airports with calculated runway capacity. • 100% of ATC Sectors of ACC and TMA encompassing international airports, with calculated sector capacity.
Rationale	GREPECAS considered that early ATFM implementation should ensure optimum air traffic flow to or through certain areas during periods in which demand exceeded or was expected to exceed the available capacity of the ATC system. Therefore, the ATFM system should reduce aircraft delays, both in flight as on the ground, and avoid system overload.
Related projects	• Automation.

Project deliverables	Relationship with the performance-based regional plan (PFF)	Responsible party	Status of implementation*	Delivery date	Comments
Assess the progress made in the ATFM implementation work programme.	PFF SAM ATM 05	TBD		2013	---
Calculation of airspace (ATC SECTOR) capacity.	PFF SAM ATM 05	States		SAM/IG/18	Brazil and Colombia submitted their studies.
Calculation of runway capacity of international airports.	PFF SAM ATM 05	States		SAM/IG/18	Argentina, Bolivia, Brazil, Chile, Ecuador, French Guiana, Paraguay, Peru and Venezuela submitted their studies.
List of airspace sectors subject to periods in which demand exceeds the existing capacity, including, if necessary, simulations by the States.	PFF SAM ATM 05	Juarez Franklin Gouveia		SAM/IG/9 SAM/IG/10	Brazil and Colombia submitted their studies.

List of operational factors affecting demand and airspace capacity for the optimisation of the existing capacity, including simulations, if necessary.	PFF SAM ATM 05	Juarez Franklin Gouveia		SAM/IG/9	Brazil and Colombia submitted their studies. Brazil, Paraguay, and Peru presented data at the SAM/IG/11 meeting.
Definition of the common elements of situational awareness.	PFF SAM ATM 06	Paulo Vila		2012	The States that exchange information are: Chile, Colombia, Paraguay, and Venezuela.
Personnel trained in strategic ATFM measures for airspace.	PFF SAM ATM 05	Juarez Franklin Gouveia		2010	In 2010, an ATFM/CDM course was conducted in Brazil with the participation of several States. In March 2009, a course on runway and ATC sector capacity calculation was conducted in Brazil. In 2012, a course for training instructors on runway and ATC sector capacity calculation was conducted in Lima.
List of factors affecting the implementation decision.	PFF SAM ATM 05	Programme Coordinator		SAM/IG/9	The following causes were identified at the SAM/IG/11 meeting: - States that do not have the requirement or the need to implement ATFM; - Budgetary and organisational reasons; - Lack of personnel specifically devoted to ATFM activities; - The personnel responsible for ATFM are involved in other functions.

Determination of air traffic demand expected for 2014 FIFA Soccer World Cup.	PFF SAM ATM 05	CGNA/Brazil		May 2014	
Establishment of ATFM critical days for FIFA 2014 Soccer World Cup.	PFF SAM ATM 05	CGNA/Brazil		May 2014	
Basic Action Plan for the FIFA 2014 Soccer World Cup (strategy of preventive and corrective maintenance of navigation and communication equipment; reinforcement of operational and maintenance personnel; establishment of daily operational briefings to air traffic controllers, etc.).	PFF SAM ATM 05	SAM States		May 2014	

Teleconferences for the consolidation of air traffic flow management strategy developed by Brazil.	PFF SAM ATM 05	SAM Regional Office		09 May 30 May 05 June	
Disseminate AIC A05/14 and AIC 08/14, as well as other relevant information, in order to give knowledge to users about the rules that should be observed for entry and operation in Brazilian airspace.	PFF SAM ATM 05	States		May 2014	
Evaluate restrictive flow measures currently adopted (must be based on well founded ATC sector capacity studies and coordinated in advance with ATC units responsible for the ATC provision in adjacent FIRs, as well as, during the Soccer World Cup, with the CGNA)	PFF SAM ATM 05	States		05 June 2014	
Daily teleconferences between CGNA and SAM States' ATFM/ATC units (coordination of operational actions and eventual ATFM measures that would be required during the day.	PFF SAM ATM 05	States/CGNA		From 10 June to 14 July 2014	

Plan for ATFM system performance oversight.	PFF SAM ATM 05	TBD		November 2014	---
Implementation of FMP/FMU	PFF SAM ATM 05	States		December 2014	
Resources required	Designation of experts in the execution of some of the deliverables.				

*

Grey *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX C1

FOLLOW-UP ON AN-CONF/12 RECOMMENDATIONS

REC	Description	Follow-up/clarification/impact on the Project´s content
1/1	The Draft Fourth Edition of the Global Air Navigation Plan (Doc 9750, GANP)	Noted Project updated
1/2	Implementation	Noted/No impact on projects
1/3	Guidance on business cases	Noted/No impact on projects
1/4	Architecture	Noted/No impact on projects
1/5	Time reference accuracy	Noted/No impact on projects
1/7	Automatic Dependent Surveillance — Broadcast	Already contemplated in projects and in Implementation Groups.
1/8	Rationalization of radio systems	Noted/No impact on projects
1/9	Space-based automatic dependent surveillance - broadcast	Noted/No impact on projects
1/10	Automatic Dependent Surveillance — Self organizing Wireless data networks	Noted/No impact on projects
1/11	Automation Roadmap	Noted/No impact by now on projects
1/12	Development of the aeronautical frequency spectrum resource	Noted/Considered by implementation groups/Considered in project activities development
1/15	Performance monitoring and measurement of air navigation systems	Noted/No impact on projects
1/16	Access and equity considerations	Noted/No impact on projects
2/2	Development of ICAO provisions for remotely operated air traffic services	Noted/No impact on projects

REC	Description	Follow-up/clarification/impact on the Project´s content
3/5	Operational performance through flight and flow – information for a collaborative environment	Noted/Considered by implementation groups/ No impact on projects
4/2	ICAO Aviation System Block Upgrades relating to ground surveillance using Automatic Dependent Surveillance – Broadcast/Multilateration, air traffic situational awareness, interval management and airborne separation	Noted/Considered by implementation groups for ASBU B1/No impact on projects
4/3	ICAO Aviation System Block Upgrades relating to airborne collision avoidance systems and ground-based safety nets	Noted/Considered by implementation groups/ No impact on projects
4/4	Positioning and tracking over oceanic and remote areas, and flight data triggered transmission	Noted/No impact on projects
4/8	Crisis coordination arrangements and contingency plans	Noted/Considered by implementation groups/ No impact on projects

APPÉNDIX C2

CAR REGION PROJECT C

CAR Region	**PROJECT DESCRIPTION**		**DP N° C**	
Programme	**Title of the Project**		**Start**	**End**
AUTOMATION AND ATM SITUATIONAL AWARENESS (ICAO programme coordinator: Julio Siu)	**AUTOMATION AND IMPROVED ATM SITUATIONAL AWARENESS IN THE CAR REGION** Project coordinator: Experts contributing to the project:	Carlos M. Jimenez (Cuba) Alejandro Romero (COCESNA) Carlos Miguel Jimenez, Jorge Centella (Cuba) Julio Cesar Mejia (Dominican Republic) Michael Polchert / Bill Blake(United States) Adriana Mattos (SITA) ANI/WG	October 2011	December 2015
Objectives	Based on the of the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP) regional performance objectives: 1. Support NAM/CAR States with implementation of automated systems and interconnection at a regional level 2. Support implementation of situational awareness improvements at CAR Region ATS units			
Scope	The project contemplates the assessment and identification of the main levels of automation, production of guides for use of existing capabilities, proposed improvements to automation levels to enhance operations and safety, development of studies and guidelines for automation and operational use of capabilities to attain these situational awareness improvements, supporting implementation of different applications such as common display of traffic, common display of meteorological conditions, and communications in general.			
Metrics	• Number of States/ANSPs participating in regional automation tests • Number of States/ANSPs implementing ATC automation functionalities between systems • Complete proposals and guidance material for the reduction of operational errors with before and after effective date of implementation guides for the CAR/NAM Region • Number of States/ANSPs reporting a reduction of incidents resulting from implementing improvements in electronic ground and air alerts • Number of States/ANSPs conducting ADS-B data or multilateration trials using the guides developed			
Goals	This Project is expected to support States with operational improvement resulting from the implementation of ATM automation systems: • NAM/CAR RPBANIP ASBU-ASUR Targets • NAM/CAR RPBANIP ASBU-AMET SIGMET Targets			

CAR Region	PROJECT DESCRIPTION	DP N° C	
Programme	**Title of the Project**	**Start**	**End**
	• NAM/CAR RPBANIP ASBU-SNET Targets • NAM/CAR RPBANIP ASBU-FICE AIDC Target		
Strategy	• Project activities will be coordinated and executed amongst project members, the project coordinator, and the programme coordinator mainly through teleconferences and meetings held from time to time in accordance with work programme activities. • The project coordinator will coordinate, as necessary, requirements of other projects and information from the NAM/CAR implementation working group with the programme coordinator. Additional experts will be included based on tasks and specialised work to be conducted.		
Justification	With the emergence of new technologies in ATM automated systems, as well as the standardization of communication protocols, data exchange in ATS units is actually viable in different ways. Available protocols in systems such as OLDI and AIDC allow ATS units to establish automated coordination, improving operational reliability and procedural effectiveness. Likewise, the standardization in processing surveillance data in ASTERIX format allows easy radar data exchange between FIRs. These automated exchanges will result in a significant reduction of ATS incident rates and operational errors. Improving situational awareness facilitates coordination, improves efficiency and safety, and ensures that the different members of the ATM community have the same information when adopting decisions collaboratively.		
Related projects	This project is related to Programme D Project (ATN and its ground-ground and air-ground applications)		

Project Deliverables	Relationship with the regional performance-Objectives (RPO) and ASBU B0 modules	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Level of automation existing in the CAR Region	RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE	ICAO - Carlos Jimenez, Cuba		Completed	
~~Sample of MoU for automation between States~~	~~RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE~~	~~Carlos Jiménez, Cuba~~		~~November 2014~~	~~There are several examples that are going to be reviewed to recommend States in this implementation.~~
Guidance material and considerations for the drafting of automation agreements/ Sample of MoU for automation between States	RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE	Carlos Jiménez, Cuba		February 2015	New joint activity
Proposals or guidelines for improving the operation and performance of flight plan data processing system, ~~tools for electronic transmission~~ and automatic exchange of ATS messages	RPO 4 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO	Alejandro Romero COCESNA		December 2015	In accordance with AIDC TF activities

[1] *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

Project Deliverables	Relationship with the regional performance-Objectives (RPO) and ASBU B0 modules	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Proposals and guidance on the use and benefits of additional/advanced automation support tools to increase aeronautical information sharing	RPO 4 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO	Bill Blake, United States		December 2015	
Monitor the implementation of ATM automation and surveillance data exchange – Progress Report	RPO 4 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO	Alejandro Romero		Completed	A regional AIDC implementation plan has been developed as part of ATM automation
~~Review of the Regional Implementation Oversight Strategy for systems in support of situational awareness improvement~~	~~RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE~~	~~Alejandro Romero~~		~~June 2013~~	~~It will be reviewed according ASBU methodology.~~
Guidelines for improving electronic ground and airborne alerts	RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE	Carlos Miguel Jimenez, Cuba		December 2014	Lack of response to survey; new date is December 2014
Guidelines on the operational implementation of ADS-B and data exchange	RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE	Adriana Mattos, SITA / Michael Polchert , Bill Blake, USA		November 2014	CONOPS of ADS-B implementation under development; initial draft available of ADS-B CONOPS

Project Deliverables	Relationship with the regional performance-Objectives (RPO) and ASBU B0 modules	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
~~Guidance in support of ATFM implementation~~	~~RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE~~	~~Michael Polchert/ Bill Blake, USA~~		~~May 2014~~	~~Rescheduled due to the operational requirements submission of Programme B~~
Guidance on the use of AIDC to reduce coordination errors	RPO 4 and 6 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE	Julio Cesar Mejia, Dominican Republic		December 2014	Date adjusted with AIDC TF
Guidance on the preparation of SIGMETs in graphic format	RPO 4, 6 and 8 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM- FICE-AMET	Alejandro Romero, COCESNA		Completed	Graphical support can be observed at the following website: http://apps.cocesna.org/eAIM/servlet/metarview .
Resources needed	• Designation of experts for the execution of the deliverables • Implement required facilities that allow interconnection of automated systems according to the established dates in the elaborated and signed MoU, respectively.				

APPENDIX C3

SAM Region	PROJECT DESCRIPTION (DP)	PD N° C1	
Programme	**Project Title**	**Starting Date**	**Ending Date**
Automation and ATM Situational Awareness *(Programme Coordinator: Onofrio Smarrelli)*	Automation *Project Coordinator: Alessander Santoro (Brazil)* *Contributing experts: Omar Gouarnalusse (Argentina), Ruben Silva (Argentina), Murilo Loureiro (Brazil), Johnny Avila (Peru) and SAM/IG ATM Automation Group*	May 2008	June 2016
Objective	Support States of the SAM Region in the implementation of automated systems, and in their regional interconnection		
Scope	The scope of the project includes the initial drafting of guidelines, trials for the identification of the automation level required at the Region's ATS units in the short and medium term, and the implementation of automation systems and their interconnection through the VSAT based South American digital network (REDDIG)		
Metrics	• Drafting of the following documents: ✓ Guidance document on automated systems requirements at ATS units (SSS) ✓ Guideline for the implementation of integrated automated systems ✓ Action plan for the interconnection of automated systems ✓ Preliminary interface control document (ICD) between systems for the interconnection of ACCs in the SAM Region ✓ Memorandum of Understanding (MoU) model for the interconnection of automated systems • Interconnection of automated systems between adjacent ACCs in the SAM Region: • Reduction in number of operational errors, including LHD in the SAM Region		
Strategy	• All tasks will be conducted by experts nominated by States and organizations of the SAM Region members of the Project *Automation, and SAM States*, under management of the project coordinator, in coordination with the programme coordinator. Communications among project members, as well as between the project coordinator and programme coordinator, shall be carried out through teleconferences and the Internet. In addition, the programme coordinator, together with the project coordinator and the contributing experts, can convene at SAM/IG implementation meetings • Once studies are completed, the results will be submitted to the ICAO programme coordinator as a final consolidated document for its analysis, review, approval and presentation at the GREPECAS PPRC		

Justification	• The CAR/SAM air traffic control centres have had difficulties in duly coordinating air traffic, an important factor contributing in air traffic incidents. The air traffic control automated centres' interconnection will permit a coordinated automated air traffic for the transfer of responsibilities between CAR/SAM adjacent area control centres, thus reducing the risk in aeronautical incidents generated by undue coordination activities and improving, at the same time, the planning phases for an efficient control of flights from/to corresponding Flight Information Regions (FIR). • The interconnection of automated systems would be facilitated, in view of REDDIG (SAM VSAT regional network), which has the necessary capability to transport automated systems applications • This project contributes towards the implementation of modules B0 FICE, B0 ASUR and B0 SNET of the *Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)*
goals	• Initial drafting of 15 MoU for the interconnection of automated systems 6 MoU period 2009-2013 (implemented) 9 MoU period 2013-2016 • Implementation of the interconnection of automated systems *Flight plan (AIDC)* *Asterix protocol radar data* 8 radar data exchanges using Asterix protocol period 2011-2016 1 radar data exchange owner for 2013 (implemented)
Related Projects	• ATFM • Improve ATM Situational Awareness

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 Modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Regional guideline document for the automation level required according to the ATM service provided in airspace and international aerodromes, assessing • operational architecture design, • characteristics and attributes for interoperability, • data bases and software FPL, CPL, CNL, RLA, etc., and • technical requirements.	PFF SAM CNS 04 PFF SAM ATM 05 PFF SAM ATM 06 B0 ASUR B0 SNET	Project Coordinator and ATM Automation Group		Completed June 2011	The System and Subsystem Specifications (SSS) document has been drafted for the identification of automated requirements necessary at ATS units (ACC), and a revision process has been conducted with the support of RLA/06/901 project and SAM/IG ATM Automation Group. Document published in site www.lima.icao.int.

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***Green**: Activity has or will deliver planned milestone as scheduled*
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***Red**: Activity has failed to deliver milestone on time, mitigation measures need to be identified and implemented*

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 Modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Guideline for the integration of automated systems and corresponding action plan	PFF SAM CNS 04 PFF SAM ATM 05 PFF SAM ATM 06 B0 ASUR	Project Coordinator and ATM Automation Group		Completed October 2010 Completed May 2012	The following has been drafted: Guideline for the integration of automated systems and revision process. Action plan revision for the integration of automated systems and continuous revision. Both documents drafts with the support of RLA/06/901 project and the SAM/IG ATM Automation Group. Document published in site www.lima.icao.int.
Preliminary interface control document (SICD) between systems for the interconnection of ACCs in the SAM Region	PFF SAM CNS 04 PFF SAM ATM 05 PFF SAM ATM 06 B0 FICE B0 ASUR	Programme Coordinator, Project Coordinator and ATM Automation Group		Completed October 2008 October 2012	Document ICD drafted. Document elaborated with the support of RLA/98/003 and later, RLA/06/901. Document published in site www.lima.icao.int. The document requires updating in view of installation of new automated and surveillance systems in the Region

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 Modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Guidelines for elaboration of Memorandum of Understanding (MoU) for the implementation of the automation system interconnection	PFF SAM CNS 04 B0 FICE B0 ASUR	Project Coordinator and ATM Automation Group		Completed October 2009	A model MoU for the interconnection of automated systems has been developed, with the support of RLA/06/901 project and SAM/IG ATM Automation Group. The MoU model is published in site www.lima.icao.int.
Initial drafting of Memorandum of Understanding (MoU) for the interconnection of automated systems	PFF SAM CNS 04 B0 FICE B0 ASUR	SAM States		March 2016	Six MoU have been drafted during the 2009-2013 period. Nine MoU would be implemented during the 2013-2016 period.

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 Modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Interconnection of automated systems between adjacent ACCs	PFF SAM CNS 04 PFF SAM ATM 05 PFF SAM ATM 06 B0 FICE B0 ASUR	SAM States		June 2016	1. Radar data has been interconnected between Argentina-Uruguay using IP protocol through REDDIG; 2. Flight plan and radar data operational interconnection has been carried out between Brazil-Venezuela through REDDIG; 3. Successful automated systems interconnection tests have been conducted (AIDC over AMHS) between Argentina-Paraguay 4. Partially successful AIDC tests have been conducted between Chile-Peru, Ecuador-Peru, Colombia-Peru, Colombia-Panamá and Colombia-Ecuador. 5. For 2016, 8 interconnections are expected to be implemented (radar data and AIDC), as well as 9 AIDC-only.
Monitor implementation progress of automation activities in the SAM Region		Programme Coordinator and Project Coordinator		May 2008 – June 2016	
Resources necessary	Implement facilities required by SAM States permitting the interconnection of automated systems in accordance with the dates established in the MoUs drafted and signed to this end				

APPENDIX C4

SAM Region	PROJECT DESCRIPTION (PD)	PD N° C2	
Programme	**Project Title**	**Starting Date**	**Ending Date**
ATM Automation and Situational Awareness *(Programme Coordinator: Onofrio Smarrelli)*	Improve ATM Situational Awareness in the SAM Region *Project Coordinator: Paulo Vila (Peru)* *Contributing experts: José Rubira, Marcos Vidal and Jorge Otiniano (Peru); Javier Vittor (Argentina), André Jansen (Brazil)*	October 2011	May 2015
Objective	Develop guidelines supporting the implementation of improvements in the situational awareness of ATS units in the South American Region		
Scope	Guidelines supporting the implementation of various applications, such as common traffic visualization, common meteorological conditions visualization and communications in general • Analysis of the current surveillance infrastructure and identification of necessary improvements to support en route and terminal airspaces, airspace classification, PBN and ATFM • Implementation of ADS-B, ADS-c and/or MLAT surveillance systems at selected airspaces • Minimum common electronic information and data bases required in support of decision-making process and alert systems towards an interoperable situational awareness among centralized ATFM units • Implement flight plan data process systems (new FPL format) and data communications tools among ACC´s • Implement advanced automation support tools to contribute towards the sharing of aeronautical information		
Metrics	Drafting of following documents: • Regional surveillance strategy for the implementation of systems in support of improvement of situational awareness – revised • Evaluation of the surveillance systems coverage in the SAM Region - completed • Guideline on technical/operational considerations for ADS-B implementation – completed • Guideline on technical/operational considerations for MLAT implementation - completed • Guideline on technical considerations in support of ATFM implementation – completed • Guideline for the presentation of MET products in graphic fomat - completed		

Strategy	• All tasks will be conducted by experts nominated by States and organizations of the SAM Region members of the Project *Improve ATM situational awareness in the SAM Region*, under management of the project coordinator. Communications among project members, as well as between the project coordinator and programme coordinator, shall be carried out through teleconferences and the Internet. • Once studies are completed, the results will be submitted to the ICAO programme coordinator as a final consolidated document for its analysis, review, approval and presentation at the GREPECAS PPRC
Goals	• Regional surveillance strategy for the implementation of systems in support to situational awareness improvement for July 2012 (completed) • Evaluation of SAM surveillance systems coverage for October 2012 (completed) • Guideline on technical/operational considerations for ADS-B implementation for June 2012 (completed) • Guideline for the drafting of SIGMET in graphic format (March 2013) (completed) • Guideline for technical/operational considerations for MLAT implementation for March 2015 • Guideline for technical considerations in support of ATFM implementation • Action plan for ADS-B implementation in the SAM Region (November 2014)
Justification	• Improve situational awareness has been identified as a great support for ATM, contributing in the increase of safety and in flight efficiency • In addition, a close relationship with the other programmes and their respective projects is necessary, with the aim of collecting the operational requirements demanded by the mentioned applications and their respective tentative implementation dates • This project contributes to the implementation of modules B0 ASUR, B0 SURV, B0 NOPS and B0 AMET of the *Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)*
Related Projects	• Air Navigation Systems in Support of PBN • Automation • ATFM • ATN Ground-ground and Air-ground Applications

Project Deliverables	Relationship with Performance Based Regional Plan aligned with ASBU	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Evaluation of surveillance infrastructure and identification of surveillance systems improvements					
Evaluation of current surveillance systems coverage in the SAM Region	PFF SAM CNS 04 B0 ASUR	Paulo Vila (Peru)		October 2012	Presented as Appendix to the Guideline on technical/operational considerations for ADS-B implementation.
Drafting of regional plan for ADS-B and MLAT implementation					
Guideline on technical/ operational considerations for ADS-B implementation	PFF SAM CNS 04 B0 SURF B0 ASUR	José Rubira (Peru) Marco Vidal (Peru)		October 2012	The Guideline includes comments from Brazil, Chile and Guyana, presented through SAM/IG/11-WP/06. The Meeting approved the Guide. Peru will later include considerations to determine the values recommended for NIC, SIL and NAC for operational application.
Guideline on technical/ operational considerations for MLAT implementation	PFF SAM CNS 04 B0 SURF B0 ASUR	(Brazil)		March 2015	The Guideline has not been started, as MLAT installation in Brazil is being awaited for.

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***Red**: Activity has failed to deliver milestone on time, mitigation measures need to be identified and implemented*

Project Deliverables	Relationship with Performance Based Regional Plan aligned with ASBU	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Guideline on technical considerations in support of ATFM implementation	PFF SAM ATM 05 B0 NOPS	Pending designation		March 2015	The guideline will base itself on the CAR/SAM ATFM Manual approved through GREPECAS Conclusion 16/35. The ATFM Guide is being awaited for in order to define the operational requirements enabling the drafting of this Guideline.
Guideline for the presentation of MET products in graphical format	PFF SAM MET 03 B0 AMET	Jorge Otiniano (Peru)		2013	The document was delivered to the Secretariat (MET) for its review by the corresponding meteorology specialists.
Action plan for regional ADS-B implementation	BO 84	Paulo Vila (Peru)		October 2014	The action plan will be drafted by experts from Brazil and Peru.
Resources necessary	Experts in the carrying out of the deliverables				

APPENDIX D1

PROJECT ON THE ATN INFRASTRUCTURE IN THE CAR REGION AND ITS GROUND-GROUND AND GROUND-AIR APPLICATIONS

CAR Region	**DESCRI PROJECT DESCRIPTION (DP)**	**DP N° D**	
Programme	**Project Title**	**Starting Date**	**Ending Date**
Ground-ground and air-ground communications infrastructure (ICAO programme coordinator: Julio Siu)	ATN infrastructure in the CAR Region and its ground-ground and ground-air applications Project coordinator: Dulce Roses (United States) Experts contributing to the project: Carlos Jimenez (Cuba) Fernando Casso (Dominican Republic) Roger Perez/Eduardo Vega/Mayda Avila (COCESNA) Veronica Ramdath/ Randy Gomes (Trinidad and Tobago) ANI/WG MEVA TMG	March 2010	June 2015
Objective	Support the implementation of the ATN network in the CAR Region and its ground-ground and air-ground applications, based on the regional performance objectives of the NAM/CAR performance-based implementation plan (NAM/CAR RPBANIP) and the CAR/SAM ANP CNS Tables 1Ba, 1Bb, and 1Bc.		
Scope	The project scope includes: • an analysis of the existing capacity for CAR networks for ATN implementation • an assessment and definition of technical improvements and/or requirements for ATN implementation • guidelines and recommendations to expedite the implementation of ground-ground (AIDC, AMHS) and air-ground applications, taking into account Doc GOLD		
Metrics	• Percentage of implementation of ATN architecture and routers • Number of AMHS applications implemented in the CAR Region • Number of completed guidelines planned for ATN and its applications.		
Strategy	• Project activities were coordinated and will be coordinated through communications amongst the project members, the project coordinator and the programme coordinator, mainly via teleconferences and eventual meetings held during events according to the activities programme, as was the case of the different meetings of the working groups for the implementation in the CAR Region. • The project Coordinator will coordinate with the programme Coordinator, requirements from other projects and information from the NAM/CAR implementation working groups. Additional experts will be incorporated as required for specialized tasks. • The deliverables of this project will be sent to the programme Coordinator for its application in the NAM/CAR implementation groups.		

Goals	With this Project it is expected to support the following implementation goals of the NAM/CAR Regions : NAM/CAR RPBANIP ASBU-FICE Targets
Justification	Support implementation proposing core documentation so States can use it as a reference for the transition, testing, and ATN interconnection and to expedite ATN applications implementation according to the operation benefits expected.
Related projects	This project is related to the projects of Programme C (Situational Awareness)

Project Deliverables	**Relationship with the regional performance-Objectives (RPO) and ASBU B0 modules**	**Responsible**	**Status of Implementation[1]**	**Date of delivery**	**Comments**
Performance assessment of the MEVA II REDDIG interconnection	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	Project D		Completed	Assessments made during MEVA TMG meetings
Technical study of CAR networks for ATN implementation	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	Project D		Completed	Assessments made during MEVA TMG meetings
Assessment of preliminary test results to determine the required bandwidth for the ATN network in the CAR and SAM Regions	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	Project D		Completed	Completed in 2010

[1] *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but expected to be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

Project Deliverables	Relationship with the regional performance-Objectives (RPO) and ASBU B0 modules	Responsible	Status of Implementation[1]	Date of delivery	Comments
Study for the configuration of an IP backbone network	RPO 4,5, 6, 7 and 8 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM-FICE-DAIM-AMET	Dom. Rep/ COCESNA		December 2014	New IPv4 Addressing scheme proposed
~~Study of communication requirements to support ATFM implementation~~	~~RPO 3 and 9 NAM/CAR RPBANIP~~	~~Cuba/ COCESNA~~		~~January 2014~~	~~Postponed by AFTM requirements definition for October 2013~~
~~Study of communication requirements to support the migration to the new OPMET format~~	~~RPO 9 and 12 NAM/CAR RPBANIP~~	~~United States/Cuba~~		~~January 2014~~	~~Requirements definition of the new OPMET format is pending~~
Plan for the transition of ATN and its applications in the CAR Region	RPO 4,5, 6, 7 and 8 of NAM/CAR RPBANIP/ RSEQ-SURF-ASUR-SNET-TBO-ACDM-FICE-DAIM-AMET	United States/COCESNA		Nov 2015	Adjusted due to MEVA III implementation
AMHS addressing plan	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	States/ Territories/ International Organisations		Completed	
Plan for the implementation of ATN ground-ground applications (AMHS)		United States/Dom. Rep/ Cuba/ Trinidad and Tobago		Completed	CAR Regional Implementation Plan used by the CAR Implementation Groups. Two AMHS circuits are being tested.

Project Deliverables	Relationship with the regional performance-Objectives (RPO) and ASBU B0 modules	Responsible	Status of Implementation[1]	Date of delivery	Comments
Plan for the implementation of ATN ground-ground applications (AIDC)	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	United States/COCESNA/ Cuba/ Trinidad and Tobago		Completed	Initial CAR Plan of AIDC implementation, through CPL-LAM messages: currently 2 AIDC services implemented in the CAR Region
Assessment and recommendations guide for the ATN applications ground-air implementation according to Doc GOLD	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	United States/COCESNA/ Trinidad and Tobago		Dec 2015	In accordance to GOLD TF
Plan for the transition of ATN ground-air applications	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	Project D		June 2016	
Monitoring of the implementation of available technology for ATN ground-air applications	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	ICAO/ States/ Territories		June 2016	
Resources needed	Designation of experts and activities execution by the group of experts (WGs).				

APPENDIX D2

SAM Region	PROJECT DESRICPTION (PD)	PD N° D1	
Programme	**Project Title**	**Starting Date**	**Ending Date**
Ground-ground and Air-ground Telecommunications Infrastructure (*Programme Coordinator: Onofrio Smarrelli)*	ATN Architecture in the SAM Region *Project Coordinator:* *Contributing experts: Omar Gouarnalusse (Argentina), Michel Areno (France), Jose Luis Paredes (Peru), Aldo Pereira (Paraguay), Francisco Almeida (Brazil) and Murilo Albuquerque Loureiro (Brazil)*	May 2010	November 2014
Objective	Study and implementation of optimum architecture for an IP protocol backbone network (REDDIG II) for the SAM Region		
Scope	Study and implementation of an IP backbone network for the SAM Region, including an optimum configuration and considering, among other deliverables, the following: • Technical review of the regional telecommunications networks (ground, satellite or mixed) for the implementation of ATN under a cost-benefit analysis • Holding of trials to determine the ATN bandwidth necessary to support ground applications • IP addressing scheme (IPv4 and IPv6) and analysis of the data communications infrastructure in support to ATS operational requirements in the short, medium and long term • Drafting of a safety guideline for the implementation of IP networks and of a routing policy for the SAM Region • Support in the bidding process by TCB (Montreal) and in the implementation of the IP backbone network for the SAM Region (REDDIG II)		
Metrics	• Drafting of a study for an IP backbone network for the SAM Region (REDDIG II) • Drafting of technical specifications for REDDIG II implementation • Drafting of a safety guideline for the implementation of IP networks and of a routing policy for the SAM Region • REDDIG II implementation phases completed		
Strategy	• All tasks will be conducted by experts nominated by States of the SAM Region members of the project *ATN Architecture in the SAM Region*, under management of the project coordinator, in coordination with the programme coordinator. Communications among project members, as well as between the project coordinator and programme coordinator, shall be carried out through teleconferences and the Internet. In addition, the programme coordinator, together with the project coordinator and the contributing experts, can convene at SAM/IG implementation meetings • Once studies are completed and REDDIG II is implemented, the results will be submitted to the ICAO programme coordinator as a final consolidated document for its analysis, review, approval and presentation at the GREPECAS PPRC		

Goals	• Complete the drafting of a study for an IP backbone network for the SAM Region by October 2010 (completed) • Complete the drafting of technical specifications for REDDIG II implementation by August 2011 (completed) • Complete the drafting of a safety guideline for the implementation of IP networks and of a routing policy for the SAM Region by May 2013 (completed) • Complete the REDDIG II implementation phases by September 2014
Justification	• Implementation of an ATN IP backbone network for the SAM Region will permit the region having a high availability communications platform meeting current and future (voice and data) services requirements in support of air navigation, thus guaranteeing the required capacity, efficiency and safety. • This project contributes to the implementation of ASBU modules B0 FICE, B0 ASUR, B0 DATM and B0 AMET and SAM PFF CNS 01, CNS04, ATM 05, ATM 06, MET 04 and AIM 02 of the *Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)*
Related Projects	• Automation • Improve ATM Situational Awareness • ATN Ground-ground and Air-ground Applications

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Analysis of the current SAM communications network (REDDIG)	PFF SAM CNS 01	REDDIG Administration, Project Coordinator and Omar Gouarnalusse (Argentina)		August 2010	**Completed**
Analysis of the current MEVA II/ REDDIG interconnection	PFF SAM CNS 01	REDDIG Administration		June 2011	**Completed**
Analysis of the AMHS band width impact on the current REDDIG satellite infrastructure	PFF SAM CNS 01 B0 FICE	Project Coordinator and Omar Gouarnalusse (Argentina)		September 2010	**Completed**

[1] ***Gray****: Activity has not started*
Green*: Activity has or will deliver planned milestone as scheduled*
Yellow*: Activity is behind schedule on milestone, but still within acceptable parameters to deliver milestone on time*
Red*: Activity has failed to deliver milestone on time, mitigation measures need to be identified and implemented*

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Long term applications requirements in the SAM Region	PFF SAM CNS 01 PFF SAM CNS 04 PFF SAM MET 04 PFFs SAM ATM 05 and 06 PFF SAM AIM 02 B0 FICE B0 ASUR B0 DATM B0 AMET	ICAO		September 2010	**Completed**
Comparative study on satellite, ground and mixed (satellite and ground) IP based network models for the SAM Region	PFF SAM CNS 01	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		October 2010	**Completed** Approved by REDDIG Member States
Definition of ATN IP network infrastructure model for the SAM Region	PFF SAM CNS 01	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		October 2010	**Completed** Approved by REDDIG Member States

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Completion of IPv4 addressing plan for the SAM Region	PFF SAM CNS 01	Project Coordinator and Omar Gouarnalusse (Argentina)		August 2010	**Completed** The addressing scheme was approved through GREPECAS Conclusion 16/37
Drafting of technical specifications for REDDIG II	PFF SAM CNS 01 PFF SAM CNS 04 PFF SAM MET 04 PFFs SAM ATM 05 and 06 PFF SAM AIM 02	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		August 2011	**Completed** Approved by REDDIG Member States
Drafting of safety guideline for implementation of IP networks	PFF SAM CNS 01	REDDIG Administration		May 2013	**Completed** Presented and approved at SAM/IG/11 meeting
Drafting of routing policy document for the SAM Region	PFF SAM CNS 01	Project Coordinator		May 2013	**Completed** Presented and approved at SAM/IG/11 meeting

Project Deliverables	Relationship with Performance Based Regional Plan (PFF) and ASBU Block 0 modules	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Support in the bidding process and in the offer evaluation	PFF SAM CNS 01	Project Coordinator, Omar Gouarnalusse (Argentina), Michel Areno (France), José Luis Paredes (Peru), Aldo Pereira (Paraguay) and REDDIG Administration		April 2012	**Completed**. The bidding was conducted by TCB, under coordination with the ICAO Regional office. The evaluation process will count with the REDDIG Administration and CNS experts selected by the REDDIG Member States
Support in the implementation of REDDIG II	PFF SAM CNS 01	REDDIG II Project Administration and REDDIG II focal points		November 2013-November 2014	The REDDIG SDD design document revision was completed (November 2013) The in-factory course was conducted (April 2014) The REDDIG II operation in factory inspection was carried out (May 2014) Coordination with all REDDIG II focal points regarding technical and administrative preparations for REDDIG II implementation, were carried out
Monitor the ATN architecture project activities in the SAM Region		ICAO		March 2010-November 2014	
Resources necessary	Economic contribution necessary for the implementation of REDDIG II				

APPENDIX D3

SAM Region	PROJECT DESCRIPTION (PD)	PD N° D2	
Programme	**Project Title**	**Starting Date**	**Ending Date**
Ground-ground and Air-ground Telecommunications Infrastructure (*Programme Coordinator: Onofrio Smarrelli)*	ATN Ground-ground and Air-ground Applications in the SAM Region *Project Coordinator: Gustavo Chiri (Argentina)* *Contributing experts: Javier Vittor (Argentina), Ruben Guillermo Silva (Argentina), Andres Jansen (Brazil), Murilo Loureiro (Brazil), Jorge Garcia (Perú) and Pedro Pastrian (Chile)*	May 2010	June 2016
Objective	Develop the implementation of ATN ground-ground and air-ground applications in the SAM Region		
Scope	Implementation of SAM ATN ground-ground and air-ground applications, including, at least: • Operational integration of international AMHS connections in the SAM Region • Operational integration of international AIDC connections in the SAM Region • Guidelines for the implementation of ground-air data in the SAM Region • Guideline for the implementation of AIDC		
Metrics	• Number of AMHS interconnections as per CAR/SAM FASID Table 1Bb • Number of AIDC interconnections as per CAR/SAM FASID Table 1Bb • Drafting of following guidelines: Guideline for the implementation of AIDC / Guideline for the implementation of ground-air data links in terminal, approach and aerodrome areas / DCL, DATIS and DVOLMET / CPDLC service through VDL in the SAM Region		
Strategy	• All tasks will be conducted by experts nominated by States and organizations of the SAM Region members of the project *ATN Ground-ground and Air-ground Applications in the SAM Region, and States of the SAM Region,* under management of the project coordinator, in coordination with the programme coordinator. Communications among Project members, as well as between the Project coordinator and programme coordinator, shall be carried out through teleconferences and the Internet. In addition, the programme coordinator, together with the project coordinator and the contributing experts, can convene at SAM/IG implementation meetings • Once studies are completed, the results will be submitted to the ICAO programme coordinator as a final consolidated document for its analysis, review, approval and presentation at the GREPECAS PPRC		
Goals	• Complete the migration towards the implementation of AMHS interconnection through IP protocol by December 2015 • Complete AIDC installation between adjacent FIRs by mid-2016 • Complete the drafting of guideline material for the implementation of AIDC; for the installation of ground/air data links in terminal, approach and aerodrome areas; DCL, DATS and DVOLMET; CPDLC service through VDL in the SAM Region by December 2013.		

Justification	• The implementation of ground-ground and air-ground data communications infrastructure will contribute to the reduction of air traffic control incidents, increasing the capacity of the transition of information with regard to the currently analogue based applications • This project contributes to the implementation of the ASBU modules B0 FICE, B0 TBO, B0 AMET and B0 DATM and SAM PFF SAM CNS 01, CNS 02, ATM 05, ATM 06, MET 03, MET04 and AIM 02 of the *Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)*
Related Projects	• Automation (systems interconnection) • ATFM • Improve ATM Situational Awareness

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Review of the regional strategy for the implementation of ground-ground and air-ground applications in the SAM Region	PFF SAM CNS 01 CNS 02 B0 FICE B0 TBO	Omar Gouarnalusse (Argentina)		June 2012	An initial review of the strategy was presented at SAM/IG/8 meeting (Lima, Peru, 10-14 October 2011). In July 2012, the Project Coordinator presented a preliminary version of the Guide, which was reviewed by the Programme Coordinator and presented at SAM/IG/10 implementation meeting for its review and approval
Guideline for the use of AIDC with the aim of reducing coordination errors	PFF SAM CNS 01 ATM 06 B0 FICE	Javier Vittor (Argentina) Ruben Guillermo Silva (Argentina)		April 2013	**Completed** The guideline was finalized and presented at SAM/IG/11 meeting (13-17 October 2013) and circulated to SAM States for review.
Guideline for the implementation ground-air data links in the SAM Region	PFF SAM CNS 02 ATM 06 B0 TBO	Andrés Jansen (Brazil)		October 2013	**Completed** The finalized guideline was presented and approved at SAM/IG/12 meeting

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***Red**: Activity has failed to deliver milestone on time, mitigation measures need to be identified and implemented*

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Operational integration of AMHS among States	PFF SAM CNS 01 ATM 05 ATM 06 MET 03 MET 04 AIM 02 B0 FICE B0 AMET B0 DATM	States / Project Coordinator / Programme Coordinator		December 2015	Of all the AMHS installed in the Region, the following are interconnected in AMHS (P1 Protocol) Argentina-Paraguay, Colombia-Peru, Guyana-Suriname and Ecuador-Peru. Successful operational trials have been carried out between Brazil-Argentina, Brazil-Peru and Brazil-Spain
Operational integration of AIDC service between adjacent ACCs	PFF SAM CNS 01 ATM 06 B0 FICE	States / Project Coordinator / Programme Coordinator		June 2016	AIDC successful operational trials have been conducted between Argentina-Paraguay through the AMHS circuit. In addition, partially successful tests have been carried out between Argentina–Chile, Chile-Peru, Colombia-Ecuador, Colombia-Panamá, Colombia-Peru and Ecuador-Peru (February- June 2014)
Monitor the implementation of ATN ground-ground and air-ground applications activities in the SAM Region		ICAO		March 2010-June 2016	
Resources necessary	Implementation of AIDC operational integration by the States of the Region				

APPENDIX D4

FOLLOW-UP TO AN-CONF/12 RECO9MMENDATIONS

REC	Description	Follow-up / Impact on the Projects
1/1	The draft Fourth Edition of the Global Air Navigation Plan (Doc 9750, GANP)	Note was taken / Taken under consideration in the projects activities
1/2	Implementation	Note was taken / No impact on the projects
1/3	Guidance on business cases	Note was taken / No impact on the projects
1/4	Architecture	Note was taken / No impact on the projects
1/5	Time reference accuracy	Note was taken / No impact on the projects
1/6	Data communications issues	Note was taken / Recommendation is being applied in programmes projects
1/8	Rationalization of radio systems	Note was taken / No impact on the projects
1/12	Development of the aeronautical frequency spectrum resource	Note was taken / Taken under consideration in the projects activities
1/13	Potential use of fixed satellite service spectrum allocations to support the safe operation of remotely piloted aircraft systems	Note was taken / No impact on the projects
1/14	Long-term very small aperture terminal spectrum availability and protection	Note was taken / Consideration has been given and necessary measures have been taken in the design and implementation of the new regional digital networks
1/15	Performance monitoring and measurement of air navigation systems	Note was taken / No impact on the projects
1/16	Access and equity considerations	Note was taken / No impact on the projects
2/2	Development of ICAO provisions for remotely operated air traffic services	Note was taken / No impact on the projects
2/3	Security of air navigation systems	Note was taken / Recommendation has been taken into account in the digital and ATN applications projects
4/4	Positioning and tracking over oceanic and remote areas, and flight data triggered transmission	Note was taken / Taken under consideration in the projects activities
4/8	Crisis coordination arrangements and contingency plans	Note was taken / No impact on the projects
6/1	Regional performance framework – planning methodologies and tools	Note was taken / Projects activities have been aligned in accordance with the recommendation

REC	Description	Follow-up / Impact on the Projects
6/2	Guidelines on service priority	Note was taken / No impact on the projects
6/3	Assessment of economic, financial and social implications of air traffic management modernization and aviation system block upgrades deployment	Note was taken / No impact on the projects
6/4	Human performance	Note was taken / Taken under consideration in the projects activities
6/11	Regional performance framework – alignment of air navigation plans and regional supplementary procedures	Note was taken / No impact on the projects
6/12	Prioritization and categorization of block upgrade modules	Note was taken / Taken under consideration in the projects activities
6/13	Development of Standards and Recommended Practices, procedures and guidance material	Note was taken / No impact on the projects

APPENDIX E1

PROJECT ON AERODROME CERTIFICATION IMPROVEMENTS IN THE CAR REGION

CAR Region	**PROJECT DESCRIPTION (PD)**	PD N° F1	
Programme	**Title of the Project**	**Start**	**End**
Aerodromes (ICAO Programme Coordinator: Jaime Calderon)	Aerodrome Certification Improvements **Project Coordinator: Norberto Cabrera (Cuba)** **Experts contributing to the project: Jorge Puquirre (El Salvador)**	October 2011	December 2016
Objective	Aerodrome certification will ensure compliance with ICAO SARPs, providing operational services, equipment and installations according to the operations intended at the aerodrome and facilitating safe and efficient aircraft operations.		
Scope	• Identify the level of implementation of the aerodrome certification process in the CAR Region • Identify training needs and develop relevant training programmes • Provide training to aerodrome inspectors with regards to aerodrome related documentation • Prepare the corresponding certification documentation • Implementation of SMS at aerodromes • Aerodrome certification inspection by the aeronautical authority • Issuance of the aerodrome certificate		
Metrics	• Number of aerodromes certified • Number of reported deficiencies in the GANDD		
Strategy	• Provide training to aerodrome inspectors in the aerodrome certification process, its implementation, the content of the aerodrome manual, SMS implementation, and exemptions. • Conduct an aeronautical study when aerodrome standards cannot be met and a technical analysis that will provide justification on the grounds, that an equivalent level of safety can be attained by other means when specifically recommended in Annex 14, Volume I. • Provide training to aerodrome inspectors in their operational oversight duties including the various related disciplines. All tasks are performed by experts nominated by CAR States under the discretion of the project coordinator. Communications among project members and between the project coordinator and the programme coordinator are done via teleconference and internet.		
Goals:	With this project it is expected to assist States in their main implementation goals as follows: • Achieve 48% of aerodrome certification in the CAR Region. • Diminish 50% of the GANDD reported deficiencies in the CAR Region.		

Rationale	• ICAO USOAP audits reveal a large number of aerodromes that have not been certified because of lack of qualified personnel in highly specialized areas, and lack of knowledge of relevant regulations • Aerodromes that were built a long time ago with no consideration of ICAO SARPs This project contributes to the implementation of CAR PFF 07 of the CAR Performance-based Air Navigation Plan (RPBANIP)
Related Projects	The following project was defined in the last meeting of the AGA/AOP/SG/8 and is related to the objective of this DP: • Improvement of runway safety

Project Deliverables	**Relationship with the regional performance-based plan (PFF)**	**Responsible**	**Status of Implementation** [1]	**Date of Delivery**	**Comments**
• Identify the level of implementation of the aerodrome certification process in the CAR Region. • Develop an action plan focused on common aerodrome certification issues in the CAR Region.	PFF CAR 07	Norberto Cabrera		December 2012	Finalized. The Regional Workshop on **Overcoming the Challenges faced by States with Aerodrome Certification** was held in the NACC Office, Mexico, 20-23 September 2011, to identify the level of aerodrome certification implementation in the CAR Region. • Some common issues were identified in the CAR Region with regards to aerodrome certification and a training programme was developed for aerodrome inspectors according to States requirements.
• Identify training needs and develop the relevant training related programmes. • Provide training to aerodrome inspectors in aerodrome related documentation	PFF CAR 07	Norberto Cabrera		December 2012	Finalized. Two workshops were carried out for aerodrome inspectors and one on the use of aeronautical studies. • Saint Maarten, 11-15 June 2012, in English • NACC Regional Office, 1-4 October 2012, in Spanish • **ICAO NAM/CAR Workshop on the use of Aeronautical Studies in the Aerodrome Certification Process**, 21-24 August 2012.

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible	Status of Implementation [1]	Date of Delivery	Comments
Development of the aerodrome certification related documentation	PFF CAR 07	Norberto Cabrera		December 2014	The Regional Workshop on GREPECAS Project F1 - Aerodrome Certification Improvements, was held in the ICAO NACC Regional Office, Mexico City, from 14 to 18 October 2013 focused on the content of the aerodrome manual. In addition, the Aerodrome Inspectors Workshop - GREPECAS Project F1 CAR Activity was held in Port-of-Spain, Trinidad and Tobago, from 9 to 13 June 2014.
SMS Implementation at aerodromes	PFF CAR 07	Norberto Cabrera		December 2014	The Aerodromes SMS Implementation Workshop (SMS) – GREPECAS Project F12 Activity was held in the ICAO NACC Office, from 18 to 21 March 2014 for Spanish speaking States to determine the status of implementation of SMS in the CAR Region.
Aerodrome Certification inspection by the Civil Aviation Authority.	PFF CAR 07	Norberto Cabrera		December 2016	Previous to the issuance of an Aerodrome Certificate, the regulatory body should carry out audits and continuous surveillance.
Issuance of the aerodrome certificate.	PFF CAR 07	Norberto Cabrera		December 2016	Once all the previous steps are implemented the aerodromes can be certified.
Resources needed	Designation of experts by States are needed in the execution of some of the deliverables				

APPENDIX E2

PROJECT ON IMPROVE RUNWAY SAFETY IN THE CAR REGION

CAR Region	**PROJECT DESCRIPTION (DP)**	**DP N° F2**	
Programme	**Title of the Project**	**Start**	**End**
Aerodromes (ICAO Programme Coordinator: Jaime Calderon)	Improve runway safety **Project coordinator: George Legarreta (USA)** **Experts contributing to the project: None**	October 2011	December 2015
Objective	The objective of the project is to examine aerodromes in the CAR Region to verify Annex 14 compliance mainly on the provision of markings, signage, lighting, runway strips and runway end safety areas in order to reduce the number of runway incursions and excursions related events. In addition the Project will provide guidelines to aerodrome operations personnel, to avoid and reduce the number of related incidents and provide mitigation measures.		
Scope	The runway safety project is aimed at aerodromes rather than at factors related to air traffic control (ATC). This project has three parts including: mitigation actions for runway incursions (RI) and runway excursions (RE) and the compliance of standards and recommended practices for the runway strip and the runway end safety area (RESA). These 3 parts are interrelated, taking into account the phase before landing on the runway principally the landing surface of the runway, taxiways for aircraft entering the runway, and the areas prepared for runway excursion.		
Metrics	• Number of aerodromes certified • Reduce the number of reported deficiencies in the GANDD that affect the 3 parts of this project. • Number of events regarding runway incursions and excursions.		
Strategy	For the purpose of the project implementation, the following three stages are considered: • Stage 1: Focuses on an inventory of each taxiway into the runway, the geometry of the taxiway into the runway, as well as markings, signs and lighting at the taxi-holding position (stop bars, runway safety lights), and the location of the runway holding position. This part also includes daily inspections of the movement area at the taxiway entry points, markings, signs, and lighting. • Stage 2: Focuses on actions to mitigate runway excursions by ensuring good runway surface conditions, avoiding contamination, and replacing inoperative runway lights, as well as through daily inspections. One of the main problems in runway excursions is the accumulation of water or rubber under wet runway surface conditions. In this regard, the project will provide guidance material that includes procedures for identifying excursions due to ponding of water on the runway and rubber accumulation and for its removal. • Stage 3: Focuses on actions to mitigate damage caused to aircraft exiting the runway, through provision and compliance with a levelled and object free runway strip portion, and compliance with the provision of runway end safety areas (RESA) in accordance with Annex 14, Vol. 1. In order to determine if facilities meet the standards, the GANDD will be used to gather information on specific deficiencies		

	related to the runway strip and the RESA. The GANDD will enable grouping in deficiency type and, based on that, definition of action plans. For RESAs that are insufficient and that cannot be corrected, the project will provide guidance material on the use of declared distances and possible placement of proven arrestor system per Annex 14, Volume I. All tasks are carried out between the project coordinator and programme coordinator respectively. There is no support by States experts. Communication between project coordinator and the programme coordinators are done through teleconference and the Internet.
Goals	With this project it is expected to assist States in their main implementation goals as follows: • Achieve 48% of aerodrome certification in the CAR Region. • Diminish 50% of the GANDD reported deficiencies in the CAR Region that affect the 3 parts of this project.
Rationale	• Some States in the CAR Region have implemented best practices to avoid runway incursions however there is a high ratio of noncompliance with surface markings, visual aids, lighting, runway strips and RESAs among others. • There is lack of best practices for mitigating runway excursions; the project will provide guidelines on mitigating measures. • There is a high rate of runway excursions, and the establishment of runway safety teams (RSTs) is deemed essential. • With the project it is expected from the airport operators compliance with Annex 14 Volume I and to bring together all involved in aerodrome operations and service providers in order to take written corrective actions for improving runway safety. This project contributes to the implementation of PFF CAR 07 of the CAR Performance-Based Air Navigation Plan (RPBANIP)
Related projects	The following project was defined in the last meeting of the AGA/AOP/SG/8, and is related to the project described in this DP: • Aerodrome certification

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible	Status of Implementation [1]	Date of Delivery	Comments
Development of a formulaire to carry out an inventory of each taxiway entering onto the runway, including the geometry of the taxiway entering onto the runway, as well as markings, signage, and lighting of the taxi-holding position (stop bars, runway safety lights), and the location of the runway-holding position.	PFF CAR 07	George Legarreta		July 2015	Activities were initiated and will extend to December 2013. • The formulaire was developed and circulated to States on 5 July 2012 (EMX0375), having received approximately 15% of the aerodromes included in the ANP. • During the workshop planned for first semester 2015 the final results of the survey will be presented and will require participants to provide information.
Implementation of mitigating actions for runway excursions by providing good runway surface conditions, avoiding surface contamination, and provide changes and the recommended longitudinal slopes, repainting faded markings, and replacement of inoperative runway lights, as well as carrying out daily inspections.	PFF CAR 07	George Legarreta		July 2015	The project will provide guidance material including procedures for identifying runway excursions due to rubber buildup and removal. These topics will be discussed during the workshop planned for first semester 2015.
Implementation of mitigating actions due to damage caused to aircraft overrunning the runway through compliance with the graded portion of the runway strip and runway end safety area (RESA) with Annex 14, Vol. 1. The GANDD will enable grouping by type of deficiency and thus determining action plans.	PFF CAR 07	George Legarreta		December 2016	For insufficient RESAs and cannot be fully adjusted, the project will provide guidance material on the use of the declared distances and the installation of proven arrestor systems such as the EMAS.

Project Deliverables	Relationship with the regional performance -based plan (PFF)	Responsible	Status of Implementation [1]	Date of Delivery	Comments
Resources needed	Designation of experts by States for the execution of some of the deliverables				

APPENDIX E3

PROJECT ON AERODROME CERTIFICATION

SAM Region	PROJECT DESCRIPTION (DP)	DP N° F1	
Programme	**Title of the Project**	**Start**	**End**
Aerodromes *(ICAO programme coordinator: Lia Ricalde)*	Aerodrome Certification *Project coordinator:* *Riardo Aguirre (Colombia)* *Experts contributing to the project:* *Alejandro Álvarez/ José Martinez Cal (ANAC – Argentina)* *René Delgado (DGAC – Bolivia)* *Marcos Pecanha /Edwilson Sena dos Santos (DECEA – Brazil)* *Rodrigo Silva / Renzi Jara (DGAC - Chile)* *Aldemar Pinzón (AEROCIVIL - Colombia)* *Augusto Diaz (DGAC – Ecuador)* *Hugo Mendoza / Roque Florentín (DINAC – Paraguay)* *Adolfo Medina / Juan Flor (DGAC – Peru)* *Carlos García Pepe (DINACIA – Uruguay)*	2010	2015
Objective	Improvement in the efficiency, capacity and safety of airport operations.		
Scope	• CDM at the airport • Implementation of aeronautical data quality and availability • Aerodrome certification at regional level • Airport planning • Airport capacity calculation of international airports • Heliport safe operations		

Metrics	• Percentage of international aerodromes with A-CDM implemented • Percentage of deficiencies eliminated regarding the non-compliance of the CAR/SAM Air Navigation Plan • Percentage of international aerodromes with updated obstacle data • Percentage of certified international aerodromes • Percentage of trained AGA inspectors • Percentage of international aerodromes with master plans • Percentage of international aerodromes with calculated aerodrome capacity • Percentage of heliports with operational approval
Strategy	• Develop guidelines for A-CDM implementation at the airports • Develop a regional action plan ensuring the provision of aeronautical data by the airport operator to the AIM, with the corresponding quality requirements • Update the aerodrome obstacle data in WGS-84 system • Harmonise State regulations with the AGA LAR set • Identify most common non-conformities at the airports of the region related with ICAO SARPs • Develop guidance for safety assessment of the non-conformities related with ICAO SARPs • Train regional aerodrome inspectors with the MIAGA • Establish an aerodrome internal audit process for operators, based on the SMS • Validate the existing regional international aerodrome certification with the AGA LAR set • Certification process oversight • Develop airport planning guidance manuals • Develop environmental management procedures in coordination with Regional Committees • Calculate the existing capacity of main international airports of the Region • Develop and apply procedures for aerodrome capacity optimization • Develop regulations to ensure safe operations at heliports

Rationale	• Airport certification difficulties in the Region are mainly due to the fact that most existing airports were built before the issuance of the ICAO SARPs that establish certification requirements. • The new commercial aircraft fleet has more requirements than the critical aircraft that were used at the time of the original design. • Difficulties in the adjustment and updating of State aeronautical legislation related to aerodromes to facilitate aerodrome certification. • Difficulties for safety and risk assessment required for each non-conformity • Lack of trained personnel within State civil aviation authorities to conduct safety risk assessment; aerodrome certification and oversight • The region shows an unexpected increase in the volume of passenger and cargo operations, as a result of which the main airports of the region are almost or already saturated • It is foreseen that the new generation of wide-body aircraft will be operating at the main airports of the region • Improving aerodrome infrastructure takes time, thus the need to optimise aerodrome existing capacity • This project contributes to the implementation of modules ASBU B0 ACDM, B0 A-SMGCS, B0 AIXM and B0 AMAN/DMAN and PFF SAM AGA 02, AGA 03, AGA 04, AGA 05, ATM 05, CNS 02, CNS 04, MET 02, MET 04, AIM 01 and AIM 02, *Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)*
Related projects	• Improvement of runway safety

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Updating of FASID Table AOP1, Doc 8733 CAR/SAM ANP	PFF SAM AGA 01 and ANRF B0 AIXM	AGA RO	**90%**	2014	Amendments to CAR/SAM Regional Air Navigation Plan, SAM 13-5 and 14-1 to Vol. I Basic and SAM 13-6 AND 14-2 TO Vol. II FASID, have been approved, updating the information contained in the list of aerodromes and Table AOP1, respectively. With these amendments the deficiencies of the aerodromes of the Region related to non-compliance of the CAR/SAM ANP have been reduced. The implementation of a last amendment for this year is foreseen, which would complete the adjustment of the information contained in the ANP.
Master plans	PFF SAM AGA 01 and ANRF B0 A-CDM	States/ Aerodromes	**25%**	2015	Training in master plans and national airport development was carried out in 2013, with the purpose that the States update their master plans if available or develop them for the airports of the States.
Regional strategy for quality implementation and availability of aerodrome aeronautical data	PFF SAM AGA 01 and ANRF B0 AIXM	Vicente Uribe	**25%**	2014	A strategy proposal has been developed to be implemented by States in order to reach the required aeronautical data quality
Survey of aerodrome obstacles based on WGS-84 system	PFF SAM AGA 01 and ANRF B0 AIXM	States/ Aerodromes	**0%**	2014	In collaboration with AIM
Development and approval of the AGA LAR set	PFF SAM AGA 02 and ANRF B0 A-CDM	Carlos Garcia Pepe	**100%**	2012	The texts of the AGA LAR set (LAR 139, LAR 153, and LAR 154) were developed by the SRVSOP AGA Experts Panel and approved by the General Board.

[1] *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but expected to be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Amendment 1 to AGA LAR set	PFF SAM AGA 02 and ANRF B0 A-CDM	Carlos Garcia Pepe	**100%**	2013	Amendment 1 to AGA LAR set included amendment 11 to Annex 14, Vol I.
Amendment 2 to AGA LAR set	PFF SAM AGA 02 and ANRF B0 A-CDM	Alejandro Alvarez	**90%**	2014	Amendment 2 to AGA LAR will be proposed for approval in the SRVSOP General Board, after completing the first aerodrome certification trial.
Harmonization / Adoption of AGA LAR set	PFF SAM AGA 02 and ANRF B0 A-CDM	States	**0%**	2015	SRVSOP Member States will initiate harmonization/adoption of the AGA LAR set when the standard is verified during the certification trials.
Development of the MIAGA	PFF SAM AGA 02 and ANRF B0 A-CDM	Carlos Garcia Pepe / Alejandro Alvarez	**100%**	2014	The AGA Inspector Manual (MIAGA) was finalized in 2012 and its first revision was completed in 2014.ñ
List of the most common non-conformities in the Region	PFF SAM AGA 03 and ANRF B0 A-CDM	Virgilio de Matos Santos Castelo Branco	**0%**	2015	Conduct a survey amongst the States, requesting information on the most common non-conformities that prevent the certification of international aerodromes
Guidance manual on the certification of aerodromes with non-conformities	PFF SAM AGA 03 and ANRF B0 A-CDM	Virgilio de Matos Santos Castelo Branco	**0%**	2015	The guidance manual will be developed based on the information retrieved from the questionnaire and will include available safety assessment tools for the most common non-conformities in the Region and what cases qualify for assessment for the purpose of obtaining the certification with deviations

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Training programme for inspectors on the certification of aerodromes with non-conformities	PFF SAM AGA 01, 03, 04, 05 and PFF SAM AGA 03 and ANRF B0 A-CDM	AGA Officer	**50%**	2015	Aerodrome inspectors have been trained in 2011 in an Aeronautical Studies Workshop carried out in Lima on physical characteristics, also in 2012 an Aeronautical Studies – Obstacle Workshop was carried out in Colombia. In 2013 the SRVSOP has started to offer risk assessment workshops to interested States.
Harmonisation of the AGA LARs	PFF SAM AGA 02 and ANRF B0 A-CDM	States - Regional System	**0%**	2015	It is expected that the harmonisation between the States and the AGA LARs will be carried out in accordance with the timetable approved by the General Board
Guide on aerodrome internal audits	PFF SAM AGA 02 and ANRF B0 A-CDM	TBD	**0%**		
Regional aerodrome certification programme	PFF SAM AGA 01, 03, 04, 05 and ANRF B0 A-CDM	TBD	**0%**		
Certification validation of existing aerodromes based on the AGA LARs	PFF SAM AGA 01, 03, 04, 05 and ANRF B0 A-CDM	TBD	**0%**		
Oversight of the certification process	PFF SAM AGA 01, 03, 04, 05 and ANRF B0 A-CDM	TBD	**0%**		

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Calculation of capacity of the main international aerodromes of the Region	PFF SAM AGA 01, 03, 04, 05 and ANRF B0 AMAN/DMAN, B0 A-SMGCS	TBD	**0%**		
Guidance Manual for runway and apron capacity optimization	PFF SAM AGA 01, 03, 04, 05 and ANRF B0 AMAN/DMAN, B0 A-SMGCS	TBD	**0%**		
Guidance Manual for heliport operations	ANRF B0 A-CDM	TBD	**25%**	2015	Develop guidance material for heliport safe operations. Draft standards for heliports have been developed and will be presented in the next AGA Experts Panel meeting in November 2014.
Resources needed	Designation of experts for the execution of some of the deliverables; financial resources for organising training courses, aerodrome certification trials, including aerodromes with non-conformities to ICAO SARPs, and meetings				

APPENDIX E4

PROJECT ON IMPROVEMENT OF RUNWAY SAFETY

SAM Region	**PROJECT DESCRIPTION (DP)**	**DP N° F2**	
Programme	**Title of the Project**	**Start**	**End**
Aerodromes *(ICAO programme coordinator: Lia Ricalde)*	Improve Runway Safety *Project coordinator:* *Augusto Díaz Albuja (DGAC - Ecuador)* *Experts contributing to the project:* *Roque Florentín (DINAC - Paraguay)* *Carlos García Pepe (DINACIA – Uruguay)*	2011	2015
Objective	Reduce runway incursions/excursions at aerodromes in order to improve runway safety.		
Scope	Regulations and documentation to support the implementation of ICAO SARPs in order to improve runway safety at aerodromes in the Region: • Strategy to prevent and mitigate accidents and incidents due to runway incursions/excursions from the AGA perspective • AGA assistance to aerodrome safety committees (RSTs) in their runway safety tasks • Guides on aerodrome safety oversight		
Metrics	• Percentage of reduction in runway incursions/excursions in the aerodromes of the Region. • Percentage of aerodromes in the Region that have aerodrome safety teams (RSTs).		
Strategy	• In coordination with other bodies engaged in runway safety, analyse runway incursion/excursion statistics and prioritise AGA responsibilities • Establish a work relationship with regional AGA committees: ALACPA (pavement) and CARSAMPAF (wildlife hazard prevention) • Assist aerodrome safety committees (RSTs) in the Region and ensure the participation of the AGA component • Develop a safety management plan to prevent and mitigate runway incursions/excursions based on the analysis mentioned in the previous paragraph • Develop guides on oversight of the implementation of safety management plans in the aerodromes of the Region • Implement the safety management plan All tasks will be carried out by experts nominated by CAR States and organisations, under the leadership of the project coordinator. Communication amongst project members and between the project and programme coordinators shall be via teleconference and the Internet. Upon completion of the studies, the results will be sent to the ICAO programme coordinator as a final consolidated document for its analysis, revision, and approval, and for submission to the GREPECAS PPRC.		

Rationale	• Runway safety is a problem that affects all areas of air navigation • Different bodies are working to improve runway safety from different perspectives. The purpose of this project is to support the existing initiatives and to work in a coordinated manner, contributing form the point of view of AGA • Although there are better practices in SAM States, there is no harmonisation to expedite their implementation in the airports of the Region. The purpose of this project is to develop a strategy to be used by States to reduce runway incursions/excursions in their airports.
Related projects	• Aerodrome Certification

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation [1]	Date of Delivery	Comments
Regional safety management plan for runway incursions/excursions	PFF SAM AGA 01, 02, 03, 04, 05	Alfredo Chavez	**0%**	2013	Analyse existing statistics and prioritise the main AGA factors that cause runway incursions/excursions, and develop a runway safety prevention and mitigation plan from the AGA perspective.
Training programme to improve runway safety	PFF SAM AGA 05	SAM RO	**100%**	2013	SMS/PAF workshop on 13-17 June 2011 in Panama to prevent runway incursions. Workshop on air navigation visual aids on 7-11 May in Lima, Peru to prevent runway incursions. Also, in July 2012 the RRSS Seminar was held in Quito, Ecuador and annual meetings (March 2013, Lima) on RST implementation in the airports of the Region are being held.

[1] *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but expected to be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation [1]	Date of Delivery	Comments
Guidance Manual on runway safety team (RST) implementation at aerodromes	PFF SAM AGA 05	GREPECAS	**100%**	2013	ICAO HQ has developed a guidance manual for RSTs.
Timetable of implementation of mitigation measures at aerodromes	PFF SAM AGA 05	States/Aerodromes	**10%**	2015	Assist RSTs in their safety prevention and mitigation tasks from the AGA perspective.
Resources needed	Designation of experts in the execution of some of the deliverables, financial resources for organising training courses and meetings.				

APPENDIX F1

CAR Region	**PROJECT DESCRIPTION (DP)**	DP N° G1	
Programme	**Title of the**	**Start**	**End**
AIM (ICAO Programme Coordinator: Raúl Martínez)	Developments for the provision of electronic terrain and obstacle data (e-TOD) (CAR) Project coordinator: Alfredo Mondragón (COCESNA) Experts contributing to the project: None	26/09/11	31/12/16
Objective	Support the implementation of the provision of e-TOD by CAR States and provide States with guidance on e-TOD implementation.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to the provision of electronic terrain and obstacle data. It contemplates guidance for the drafting of an action plan and guidance for e-TOD implementation to support the development of digital terrain models (DTMs) to support the production of electronic aeronautical charts and other products required by the users.		
Metrics	Number of States with an e-TOD implementation action plan. Number of States that establish letters of agreement with geographical institutes and adjacent States (FIRs) Number of States that implement Areas 1, 2, 3 and 4		
Strategy	The conduction of project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (and other electronic media). The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidate d document for analysis, review and approval, and for presentation to the GREPECAS PPRC by the programme coordinator.		
Goals	Develop a survey to determine the status of implementation of the e-TOD. Preparing the document with the results of the survey and prepare a training Plan aimed at the support of the States with more requirements and difficulties in the implementation of the e TOD.		

Rationale	Compliance of SARPS Annex 15 and Annex 4 and ICAO Document 9881, availability of information of eTOD process development of the States in order to facilitate the implementation in those States where it is necessary to count with guidance material or some specific support
Related projects	This project is related to projects G2 "Assessment and development of QMS applied to AIM in CAR States"

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	**Status of Implemen-tation***	**Delivery date**	**Comments**
Develop Regional survey in accordance with the objectives of the eTOD project	PFF CAR AIM	Alfredo Mondragón COCESNA		August 2014	Survey has been sent to the States - in process-
Prepare analysis of survey data and present an Action Plan in accordance with the objectives of the eTOD project		Raúl Martínez ICAO NACC		December 2014	

Resources required	Designation of experts in the execution of deliverables. Commitment by States to support the designated Coordinators and experts. (No expert of the States has been appointed in this project to date)

Grey *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

CAR Region	**PROJECT DESCRIPTION (DP)**	DP N° G2	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Raúl Martínez)	Development of support material on QMS applied to AIM in CAR States Project coordinator: Enrique Echarri (Cuba) Experts contributing to the project: None	September 2012	December 2016
Objective	Support the implementation of the provision of QMS by CAR States and provide States with guidance on QMS implementation.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to quality management in AIM services of the Region. Drafting of an action plan and guides for the implementation of QMS in the digital/ electronic environment of AIM.		
Metrics	Number of States that have implemented ISO 9001:2008 QMS.		
Goals	Develop a survey to determine the status of implementation of the QMS. Preparing the document with the results of the survey and prepare a training Plan aimed at the support of the States with more requirements and difficulties in the implementation of the QMS.		
Strategy	Project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (and other available electronic media). The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and works to be executed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.		
Rationale	The quality management system in AIM services must give users the necessary assurance and confidence that the aeronautical information/data being distributed meets quality requirements in terms of accuracy, resolution and integrity. The States need ICAO guidance for the QMS implementation process.		
Related projects	This project is related to projects G1 “Developments for the provision of terrain and obstacle data eTOD”		

Project deliverables	Relationship with the performance-based regional plan (PFF)	Responsible party	Status of implementation*	Delivery date	Comments
Develop Regional survey in accordance with the objectives of the QMS project	PFF: CAR AIM	Enrique Echarri Cuba		August 2014	Has been sent to the States the survey - in process-
Prepare analysis of survey data and present an Action Plan in accordance with the objectives of the QMS project		Enrique Echarri Cuba Raúl Martínez ICAO NACC		December 2014	
Resources required	Designation of experts in the execution of some deliverables. Commitment by States to support the Coordinators and experts. (No expert of the States has been appointed in this project to date)				

Grey *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX F2-1

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G1	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Roberto Arca Jaurena)	Implementation of the provision of electronic terrain and obstacle data (e-TOD) (SAM) Project coordinator: Juan González (Uruguay) Experts contributing to the project: SAM/AIM/IG	26/09/11	31/12/15
Objective	Support the implementation of the provision of e-TOD by SAM States, and provide guidance to States on GIS acquisition and management.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to the provision of electronic terrain and obstacle data. It contemplates the drafting of an Action plan and guides for the implementation of e-TOD to support developments in the provision of electronic terrain and obstacle data for the evolution of digital terrain models (DTM) to gradually improve electronic aeronautical charts and other similar products, with the support of tools such as the Geographical Information Systems (GIS).		
Metrics	• Number of States that have implemented GIS or automated systems. • Guide-document with action plan approved. • Number of States that establish SLAs. • Main International Airports with Area 2 (eTOD) surveyed		

Strategy	The conduction of project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (GoToMeeting application) and meetings that may be held within other scheduled events, based on the activities of the work programme. The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and works to be executed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.
Goals	Draft the Guide-document containing the objectives of the e-TOD project. 2012. Define the technical and e-TOD project specifications. 2012. Prepare the document containing the e-TOD technical specifications. 2012. Guide on the acquisition of a Geographical Information System (GIS). 2012. GIS implementation Manual. 2012. Available Methodology and tools for surveying Area 2. 2013 Main International Airports with Area 2 surveyed. 2016
Rationale	Compliance with the SARPs of Annexes 15 and 4 to facilitate the execution of performance-based air operations and to advance with the AIS-AIM Transition Roadmap. A close relationship with other projects is needed in order to obtain the operational requirements of the aforementioned applications and their respective tentative dates of implementation.
Related projects	This project is related to Project G3 "Implementation of the Quality Management System in the AIM units" in the CAR/SAM States.

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	**Status of implementation***	**Delivery date**	**Comments**
Survey on the status of eTOD implementation.	PFF: SAM AIM/02	Juan González Uruguay		30/11/2011	**Finalised on schedule**.
Generate follow-up report.	PFF: SAM AIM/02	Juan González Uruguay		30/04/2012	**Finalised on schedule**.

Develop Guide-Document with the objectives of the eTOD project.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	**Finalised on schedule**. Delivered 30/09/2012
Define the technical specification of the eTOD project.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	**Finalised on schedule**. Delivered 30/09/2012
Develop the document with the eTOD technical specifications.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	**Finalised on schedule**. Delivered 30/09/2012
Guide for the acquisition of a geographical information system (GIS).	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	**Finalised on schedule**.
GIS implementation manual.	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	**Finalised on schedule**.
Present to States the different options available for surveying Area 2	ASBU:BO30 DATM	ICAO Coordinator		26/07/2013	**Finalised on schedule**.
Conduct seminars for eTOD specialists, describing the plans and expected operational and economic benefits.	PFF: SAM AIM/02 ASBU:BO30 DATM	ICAO Coordinator		30/03/2015	
Resources required	Designation of experts in the execution of some of the deliverables. More commitment by States to support the designated Coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX F2-2

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G2	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Roberto Arca Jaurena)	G2: Implementation of Aeronautical Information Exchange Systems (AIXM) (SAM) Project coordinator: No coordinator Experts contributing to the project: SAM/AIM/IG	01/03/12	01/12/15
Objective	Prepare an action plan to be implemented by States for the application of the aeronautical information/data exchange model.		
Scope	The scope of the project contemplates the evaluation and identification of automation levels associated to the integration of the aeronautical information and data exchange model in the Region, through surveys, the identification of database providers, and the follow-up on the development of SARPs on this matter.		
Metrics	Number of States that have implemented an Action Plan for data exchange systems.		
Goals	Complete all the documentation needed by States before 31/12/15.		

Strategy	Project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (GoToMeeting application). Seminars/meetings are scheduled in accordance with work programme activities. The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. Coordination will take place between the CAR and SAM Regions. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.
Rationale	Integrate aeronautical information so as to permit the interoperability of ATM systems while preserving safety, applying the information exchange models.
Related projects	This project is related to Project G3 "Implementation of the Quality Management Systems in the AIM units in SAM States".

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	***Status of Implementation**	**Delivery date**	**Comments**
Survey of the provision of IAIP, using a table.	PFF: SAM AIM/02	ICAO coordinator		16/03/12	**Finalised on schedule** at the SAM/AIM meeting.
Circulation of IAIP survey to States	PFF: SAM AIM/02	ICAO coordinator		16/03/12	**Finalised on schedule** at the SAM/AIM meeting.
Collection and updating	PFF: SAM AIM/02	ICAO coordinator		16/03/12	**Finalised on schedule** at the SAM/AIM meeting.
Collection of experiences in SAM States with the electronic AIP	PFF: SAM AIM/02	ICAO coordinator		16/03/12	**Finalised on schedule** at the SAM/AIM meeting.

Analyse Eurocontrol AIXM specifications	PFF: SAM AIM/02	ICAO coordinator		01/10/14	
Organise AIXM seminar	PFF: SAM AIM/02	ICAO coordinator		August 2015	
Develop guidance material	ASBU: BO30 DATM	ICAO coordinator		28/09/15	
Develop AIXM action plan for the States	PFF: SAM AIM/02 ASBU: BO30 DATM	ICAO coordinator		03/11/15	
Resources required	Designation of experts in the execution of some of the deliverables. Commitment by States to support the coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX F2-3

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G3	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Roberto Arca Jáurena)	Assessment and development of QMS applied to AIM in SAM States Project coordinator: Oscar Dioses (Peru) Experts contributing to the Project: SAM/AIM IG David Díaz (Peru)	03/10/11	01/09/14
Objective	Implement guides applicable to the quality management system in a digital/electronic AIM environment in the SAM Region, based on the regional performance objectives of the SAM performance-based implementation plan.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to quality management in AIM services in the Region. Drafting of an action plan and guides for the implementation of QMS in a digital/electronic AIM environment.		
Metrics	Percentage of States with ISO 9001:2008 QMS certification.		
Goals	50% of States with the ISO standard 9001:2008 implemented by 2013, and certified by 2014.		
Strategy	Project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (GoToMeeting application) and meetings that may be held within other scheduled events, based on the activities of the work programme. The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.		

Rationale	The quality management system in AIM services must provide users the required guarantee and assurance that the aeronautical information/data distributed meets quality requirements in terms of accuracy, resolution and integrity. There needs to be a close relationship with other projects in order to collect the operational requirements of the aforementioned applications and their respective tentative dates of implementation.				
Related projects	This project is related to Projects G1 "Implementation of the provision of electronic terrain and obstacle data e-TOD" and G2 "Implementation of Aeronautical Information Exchange Systems (AIXM)".				
Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	**Status of imple-mentation***	**Delivery date**	**Comments**
Prepare surveys to establish the levels of compliance and implementation of AIM-QMS based on ICAO guides	PFF: SAM AIM/01	ICAO coordinator		25/11/11	**Finalised as scheduled**.
Circulate surveys to the States	PFF: SAM AIM/01	ICAO coordinator		17/02/12	**Finalised as scheduled**.
Collect and tabulate the information of the States	PFF: SAM AIM/01	ICAO coordinator		13/04/12	**Finalised on 30/03/12**.
Description of steps for QMS implementation.	PFF: SAM AIM/01	SAM/AIM/WG		30/03/12	**Finalised as scheduled**.

QMS self-assessment questionnaire	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	**Finalised as scheduled**.
Template with QMS assessment results	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	**Finalised as scheduled.**
QMS implementation plan	PFF: SAM AIM/01	David Diaz RLA/06/901		19/10/12	**Finalised as scheduled**.
QMS procedures and preventive actions.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	**Finalised as scheduled**.
QMS internal audit procedure.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	**Finalised as scheduled.**
Procedure for controlling AIS service management system records	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	**Finalised as scheduled**.
Procedure for drafting QMS documents.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	**Finalised as scheduled.**
Service control procedure – QMS non-conforming products.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	**Finalised as scheduled**.
Procedures for controlling the documents of the AIS service management system.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	**Finalised as scheduled**.

SLA with service providers to ensure the quality of the information and the AIM data exchange.	PFF: SAM AIM/01	Juan J. González Uruguay		19/10/12	**Finalised as scheduled.**
Collect certifications and produce report on the status of ISO 9001:2008 certifications in the SAM Region	PFF: SAM AIM/01	ICAO coordinator		01/09/14	
Resources required	Designation of experts in the execution of some of the deliverables. More commitment by States to support the designated coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX G1

ACTIONS ASSIGNED TO MET TAKEN FOR AN-CONF/12 RECOMMENDATIONS

Recommendations adopted by AN-CONF/12	Action taken by ICAO NACC RO/MET or comments for its implementation
Recommendation 1/1 – The draft Fourth Edition of the Global Air Navigation Plan (Doc 9750, GANP) That States: a) agree in-principle, with the replacement of the introduction by the high level policy principles as shown in the appendix and inclusion of other proposed improvements made at this Conference, into the updated draft Fourth Edition of the GANP; b) should have the opportunity to provide any final comments on the updated draft GANP to ICAO before it is considered by the ICAO Assembly in 2013. That ICAO: c) include the key air navigation policy principles presented in the appendix under "Global Air Navigation Plan" into the Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) develop financial policies which support efficient acquisition and implementation of global air navigation services infrastructure and aircraft equipage; e) taking a total systems and performance-based approach, create a Standards and Recommended Practices development plan for the aviation system block upgrades including the establishment of agreed global priorities between the different blocks and modules; f) define a stable and efficient process for endorsement by the 38th Session of the ICAO Assembly, for updating the GANP that ensures stability in module timelines for any future updates; g) ensure that the nature and status of the planning information in the various documents pertaining to the GANP are consistent and complete and allow due account to be taken of the inputs from ATM research, development and deployment programmes.	a) Completed b) Completed c) to g) Note
Recommendation 1/2 – Implementation That ICAO: a) through its regional offices, provide guidance and practical assistance to States and regions and subregions when they decide to implement individual blocks or modules of the aviation system block upgrades; b) establish a group and improved mechanism for interregional cooperation to ensure harmonization of air traffic management; c) assist States and regions in training and capacity-building towards implementation of the relevant modules of the aviation system block upgrades.	a) to c) Note
Recommendation 1/3 – Guidance on business cases That ICAO complete development of guidance material on business case analysis, adopting such appropriate guidance material that may be already available or under development.	Note
Recommendation 1/4 – Architecture That ICAO: a) develop, for inclusion in the first update of the GANP after the 38th Session of the ICAO Assembly, a global ATM logical architecture representation in support of the GANP and planning work by States and regions; b) develop a breakdown of the logical architecture of the ground system to the level needed to best address the global interoperability issues.	a) and b) Note
Recommendation 1/5 – Time reference accuracy That ICAO define the accuracy requirements for the future use of a time reference and to prepare the necessary amendments to Standards and Recommended Practices.	Note

Recommendations adopted by AN-CONF/12	Action taken by ICAO NACC RO/MET or comments for its implementation
Recommendation 1/15 – Performance monitoring and measurement of air navigation systems That ICAO: a) establish a set of common air navigation service performance metrics supported by guidance material, building on existing ICAO documentation (e.g. Manual on Global Performance of the Air Navigation System (Doc 9883) and the Manual on Air Navigation Services Economics (Doc 9161)); b) promote the development and use of "leading safety indicators" to complement existing "lagging safety indicators" as an integral and key component to drive improvement in performance and in the achieved management of risk; c) encourage the early and close involvement of the regulator and oversight bodies in the development, proving of concepts and implementation of the aviation system block upgrades and regional programmes.	a) and c) Note
Recommendation 1/16 – Access and equity considerations That States: a) ensure, as part of the aviation system block upgrade implementation, the principles of access and equity are included in all airspace modernization and redesign efforts; b) detail how they will monitor the service providers to ensure that they are providing fair, equitable, and efficient access to all aviation services including general aviation.	a) and b) Included in methodology and activities
Recommendation 4/7 – ICAO aviation system block upgrades relating to meteorological information That the Conference: a) endorse the aviation system block upgrade module relating to meteorological information included in Block 1, including the addition of the provision of information on space weather, and recommend that ICAO uses it as the basis of its work programme on the subject; b) agree in principle the aviation system block upgrade module relating to meteorological information included in Block 3 as the strategic direction for this subject. That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to meteorological information in the draft Fourth edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) undertake the development of the air traffic management meteorological information integration plan and an associated roadmap by a cross-disciplinary group of experts; e) work on defining the meteorological information exchange model as an enabler for system-wide information management; f) invite the next Meteorology Divisional Meeting, held in coordination with the World Meteorological Organization, to develop initial provisions in Annex 3 — *Meteorological Service for International Air Navigation* relating to the aviation system block upgrade modules concerning meteorological information and f) above, and to develop a long-term strategy to support their further development and full implementation. That States: g) according to their operational needs, to implement the aviation system block upgrade module relating to meteorological information included in Block 0, including the addition of the provision of OPMET information; h) work together in the implementation of the aviation system block upgrades relating to meteorological information and to increase investment in education and training.	c) to f) Note g) to h) Included in the ASBU
Recommendation 4/8 – Crisis coordination arrangements and contingency plans That ICAO: a) consider how crisis coordination arrangements for potentially disruptive events, similar to that used for volcanic eruptions, could be established on a regional basis; b) and regional offices continue to support the development, promulgation, maintenance of contingency plans, including the holding of practical exercises, in preparedness for potentially disruptive events, including those events that may adversely impact aviation safety.	a) Note b) Exercises are made annually with the Meteorological Watch Office (MWO) in coordination with the Volcanic Ash Advisory Centre (VAAC)

Recommendations adopted by AN-CONF/12	Action taken by ICAO NACC RO/MET or comments for its implementation
Recommendation 6/1 – Regional performance framework – planning methodologies and tools That States and PIRGs: a) finalize the alignment of regional air navigation plans with the Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP) by May 2014; b) focus on implementing aviation system block upgrade Block 0 Modules according to their operational needs, recognizing that these modules are ready for deployment; c) use the electronic regional air navigation plans as the primary tool to assist in the implementation of the agreed regional planning framework for air navigation services and facilities; d) involve regulatory and industry personnel during all stages of planning and implementation of aviation system block upgrade modules; e) develop action plans to address the identified impediments to air traffic management modernization as part of aviation system block upgrade planning and implementation activities. That ICAO: f) considers how the continuous monitoring approach to safety oversight maps to the evaluation of Member States' safety oversight capabilities concerning aviation system block upgrades; g) review the current amendment process to the Regional Air Navigation Plans (ANPs) and recommend improvements to increase efficiencies related to the approval and maintenance of the data in the regional ANPs; h) develop guidance material, on the basis of best practices employed worldwide, for the regional/local deployment of new ATM technologies, required procedures, operational approvals and continue to support States in the implementation of the aviation system block upgrades; i) identify the issues, funding, training and resource requirements necessary to support a safety framework that would lay the foundation for successful implementation the aviation system block upgrades; j) develop, together with industry and stakeholders, an engagement strategy to address the economic and institutional impediments to implementation of the aviation system block upgrades; k) develop a mechanism for sharing of best practices for the aviation system block upgrade implementation; l) define a methodology to ensure interregional and global harmonization of air navigation services through ANRF reporting in an effective and timely manner, and consider the employment of interregional and multi-regional fora.	a) States and PIRGs finalize the alignment of regional air navigation plans with the Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP) by May 2014 b) States and PIRGs focus on implementing ASBU Block 0 Modules according to their operational needs c) States, PIRGs, IOs, use the electronic regional air navigation plans as the primary tool to assist in the implementation of the agreed regional planning framework for air navigation services and facilities d) States and PIRGs involve regulatory and industry personnel during all stages of planning and implementation of ASBU modules e) States and PIRGs develop action plans to address the identified impediments to air traffic management modernization as part of aviation system block upgrade planning and implementation activities f) to l) Note j) Note
Recommendation 6/2 – Guidelines on service priority That: a) ICAO develop an appropriate set of operational and economic incentive principles to allow early benefits of new technologies and procedures, as described in the aviation system block upgrade modules, to support operational improvements, while maximizing safety, capacity and overall system efficiency; b) States and international organizations contribute to this work.	a) and b) Note
Recommendation 6/3 – Assessment of economic, financial and social implications of air traffic management modernization and aviation system block upgrades deployment That ICAO: a) undertake work toward developing a network-wide operational improvement level assessment for global use, which should include the development of standard values and processes for economic evaluations; b) take the relevant conclusions from the AN-Conf/12, regarding economic, financial and social aspects of the aviation system block upgrades, to the Sixth Air Transport Conference with the aim of developing solutions which would support a safe and sustainable air navigation system. That States: c) conduct their economic, financial and social analyses in a closely coordinated manner with relevant ATM stakeholders in view of their diverse position of involvement in the implementation of aeronautical systems.	a) and b) Note c) States conduct their economic, financial and social analyses in a closely coordinated manner with relevant ATM stakeholders in view of their diverse position of involvement in the implementation of aeronautical systems

Recommendations adopted by AN-CONF/12	Action taken by ICAO NACC RO/MET or comments for its implementation
Recommendation 6/4 – Human performance That ICAO: a) integrate human performance as an essential element for the implementation of ASBU modules for considerations in the planning and design phase of new systems and technologies, as well as at the implementation phase, as part of a safety management approach. This includes a strategy for change management and the clarification of the roles, responsibilities and accountabilities of the aviation professionals involved; b) develop guidance principles, guidance material and provisions, including SARPs as necessary, on ATM personnel training and licensing including instructors and assessors, and on the use of synthetic training devices, with a view to promoting harmonization, and consider leading this effort with the support of States and industry; c) develop guidance material on using field experience and scientific knowledge in human performance approaches through the identification of human-centred operational and regulatory processes to address both current safety priorities and the challenges of future systems and technologies; d) assess the impact of new technologies on competencies of existing aviation personnel, and prioritize and develop competency-based provisions for training and licensing to attain global harmonization; e) establish provisions for fatigue risk management for safety within air traffic services operations; f) develop guidance material on different categories of synthetic training devices and their respective usage. That States: g) provide human performance data, information and examples of operational and regulatory developments to ICAO for the benefit of the global aviation community; h) support all ICAO activities in the human performance field through the contribution of human performance expertise and resources; i) adopt airspace procedures, aircraft systems, and space-based/ground-based systems that take into account human capabilities and limitations and that identify when human intervention is required to maintain optimum safety and efficiency; j) investigate methods to encourage adequate numbers of high quality aviation professionals of the future and ensure training programmes are in line with the skills and knowledge necessary to undertake their roles within a changing industry.	a) to f) Note g): States provide human performance data, information and examples of operational and regulatory developments to ICAO h) States support all ICAO activities in the human performance field through the contribution of human performance expertise and resources i) States adopt airspace procedures, aircraft systems, and space-based/ground-based systems that take into account human capabilities and limitations and that identify when human intervention is required j) States investigate methods to encourage adequate numbers of high quality aviation professionals of the future and ensure training programmes are in line with the skills and knowledge necessary
Recommendation 6/11 – Regional performance framework – alignment of air navigation plans and regional supplementary procedures That ICAO initiate a formal amendment process in accordance with normal procedures to align the areas of applicability of the air navigation plans and the regional supplementary procedures, observing the following principles: 1) there will be no change to the current accreditation of the ICAO regional offices to Contracting States; 2) there will be no change to the obligation of individual States to provide services in accordance with ICAO Annex 11 — *Air Traffic Services*, 2.1; 3) there will be no change to the governance responsibilities of the ICAO Council, including approval of amendments to air navigation plans and regional supplementary procedures; 4) there will be no change to the current requirements for services and facilities and or to the current supplementary procedures for a given airspace as listed in current air navigation plans and regional supplementary procedures; 5) there will be no change to the principle that a planning and implementation regional group is composed of the Contracting States providing air navigation service in the air navigation region and that other Contracting States can participate in the activities with observer status; 6) there will be no change to ICAO's assistance to planning and implementation regional groups from the regional offices; 7) the responsibilities of the performance framework management for an air navigation region will now be integrated and will rest with the planning and implementation regional group established for the region; 8) to the extent possible, the main traffic flows will be accommodated within homogeneous airspaces in order to minimize changes between different air navigation systems and different operational procedures during flight.	Note

Recommendations adopted by AN-CONF/12	Action taken by ICAO NACC RO/MET or comments for its implementation
Recommendation 6/12 – Prioritization and categorization of block upgrade modules That States and PIRGs: a) continue to take a coordinated approach among air traffic management stakeholders to encourage effective investment into airborne equipment and ground facilities; b) take a considerate approach when mandating avionics equipage in its own jurisdiction of air navigation service provision, taking into account of burdens on operators including foreign registry and the need for consequential regional/global harmonization. That ICAO: c) continue to work on guidance material for the categorization of block upgrade modules for implementation priority and provide guidance as necessary to planning and implementation regional groups and States; d) modify the block upgrade module naming and numbering system using, as a basis, the intuitive samples agreed by the Conference; e) identify modules in Block 1 considered to be essential for implementation at a global level in terms of the minimum path to global interoperability and safety with due regard to regional diversity for further consideration by States.	Already adopted a) States, PIRGS and IOs continue to take a coordinated approach among air traffic management stakeholders to encourage effective investment into airborne equipment and ground facilities b) States, PIRGs and IOs take a measured approach when mandating avionics equipage in its own jurisdiction of air navigation service provision, taking into account of burdens on operators including foreign registry and the need for consequential regional/global harmonization c) Note d) Note e) Note
Recommendation 6/13 – Development of Standards and Recommended Practices, procedures and guidance material That ICAO: a) improve its project management and coordination of contributing ICAO panels, study groups and other expert groups, including task forces and other specialized teams tasked with the development of ICAO provisions and related work, through: 1) consistent application of the *Directives for Panels of the Air Navigation Commission* (Doc 7984); 2) receiving regular reports from the expert groups against agreed terms of reference and work programmes; 3) mandating strong coordination between all expert groups developing ICAO provisions to ensure efficient management of issues and avoidance of duplication; 4) application of the principles of accountability, geographical representation, focus, efficiency, consistency, transparency and integrated planning to the operation of all the expert groups; 5) developing documented procedures for other expert groups, including task forces and other specialized teams as well; 6) better use of today's communication media and internet to facilitate virtual meetings, thereby increasing participation and reducing costs to States and ICAO; b) continue to coordinate with the other recognized standards-making organizations (Assembly Resolution A37-15 refers) in order to make the best use of the capabilities of these other recognized standards-making organizations and to make reference to their material, where appropriate; c) initiate studies to improve the verification and validation process required within ICAO before material developed by recognized standards-making organizations can be referenced in ICAO documentation; d) consider a methodology by which ICAO can capture the regional implementation and challenges, and to reflect them in a standardized process to effectively support the aviation system block upgrade deployment.	a) to d) Note
Recommendation 6/14 – Guidelines for conducting aeronautical studies to assess permissible penetration of obstacle limitation surfaces That ICAO develop comprehensive guidelines for States in the uniform application in conducting aeronautical studies to assess the permissible penetration of obstacle limitation surfaces (OLS).	Note

APPENDIX G2

PROJECT FOR OPMET EXCHANGE OPTIMIZATION, INCLUDING SIGMET (WS, WV AND WC) AND WARNINGS

CAR Region	PROJECT DESCRIPTION (DP)	DP N° H4	
Programme	**Title of the project**	**Start**	**End**
Aeronautical meteorology *(Programme coordinator: Guillermo Vega)*	*Optimisation of OPMET exchange, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts* *Project Coordinator:* ***Dr. Enrique Camarillo*** *(Mexico)* *Experts contributing to the project:* Werner Stolz (Costa Rica), Danilo Ramírez (El Salvador)	December 2011	December 2014
Objective	Achieve at least 95% efficiency in the preparation and dissemination of OPMET information to CAR States by 31 November 2013. The current achievement is 90%.		
Scope	Correct preparation and timely dissemination of OPMET information involves all MET service units [(EMA(s), OMA(s), MWO(s) and OPMET data banks] of all CAR aerodromes listed in the CAR/SAM ANP.		
Metrics	The percentage of OPMET messages received on time at the Brasilia International OPMET Data Bank (according to Annex 3, Appendix 10, OPMET control considers as messages received those OPMET messages with transit times of 10 minutes) and verification of proper and standard production (quality) of OPMET information at MET services [(EMA(s), OMA(s), and MWO(s)] (Annex 3, in Appendices 3, 4, 5, and 6, contains the (OPMET) message planning tables.		
Goals	a) Reach 85% in the reception of OPMET data of the CAR Region in the Brasilia International OPMET Data Bank on 31/12/12; and 95% on 31/10/13; and b) Reach 85% in the reception of OPMET data in each CAR State on 31/12/12; and 95% on 28/02/2015.		
Strategy	All tasks will be carried out by experts nominated by CAR States (Points of Contact – POC) and by experts contributing to the project, led by the Project Coordinator and under the supervision of the MET Programme Coordinator through State letters sent by the ICAO Mexico Office, by e-mail, and the "GoToMeeting" tool. Upon completion of the tasks, the results will be sent to the MET Programme Coordinator as a final document for submission to, and if necessary approval by, the GREPECAS CRPP through the GREPECAS fast-track procedure. For the purpose of collaborative decision-making, meetings will be held with the areas involved.		

Rationale	More timely meteorological information will optimise flight path planning and prediction, thus improving ATM system safety and efficiency, pursuant to GREPECAS Conclusion 12/64 (CAR/SAM OPMET EXCHANGE CONTROLS). Meteorological information will also minimise the environmental impact of air traffic.
Related projects	➢ Automation ➢ Implementation of ATFM ➢ Installation of AMHS at MET units having an international OPMET requirement ➢ Implementation of the MET information quality management system (QMS/MET) ➢ Enhanced ATM situational awareness ➢ Implementation of the new flight plan format (FPL)

Project Deliverables	**Relationship with the performance-based regional plan (PFF)**[i]	**Responsible Party**	**Status of Implementation**[ii]	**Date of Delivery**	**Comments**
OPMET guide revised and updated	PFF CAR MET 02	MET programme coordinator and project coordinator		September 2012	The OPMET guide prepared by the SAM Office will include procedures for preparing OPMET data and tables containing the AFTN addresses to which OPMET information must be sent worldwide in accordance with the CAR/SAM FASID, thus facilitating the preparation and issuance of MET messages.
Results of coordinated controls of annual SIGMET WV tests	PFF CAR MET 02	POC and BR OPMET data bank		February 2013	The measurement of SIGMET WV messages received on time at the Brasilia International OPMET Data Bank will give the actual percentage of OPMET data, and the verification of the proper preparation of SIGMET WV messages at MWO(s) will permit an assessment of OPMET information quality.
Results of the analysis of coordinated controls of annual SIGMET WV tests	PFF CAR MET 02	MET programme coordinator		August 2014	The results obtained from the coordinated controls of annual SIGMET WV tests will allow programme and project coordinators to adopt, if

Project Deliverables	Relationship with the performance-based regional plan (PFF)[i]	Responsible Party	Status of Implementation [ii]	Date of Delivery	Comments
		and project coordinator			necessary, corrective action for subsequent coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts.
Results of coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts	PFF CAR MET 02	POC and BR OPMET data bank		August 2014	Timely measurements at the Brasilia International OPMET data bank will provide the actual percentage of OPMET data received, and the verification of the proper preparation of OPMET information at MET services [(EMA(s), OMA(s), and MWO(s)] will permit to assess the quality of OPMET information.
Results of the analysis of coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts	PFF CAR MET 02	MET programme coordinator and project coordinator		September 2014	The results obtained from coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts will give programme and project coordinators an idea of project results.
Final project report	PFF CAR MET 02	MET programme coordinator and project coordinator		February 2015	The purpose of the final project report to be submitted by the programme coordinator is to enable the NACC Office, Mexico to check the achievements of the project and propose to the States future measures to maintain the level attained through OPMET controls.
Resources needed	Funds for meetings with project members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen OPMET tests and controls, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems. Likewise, participants must be given facilities to participate in GoToMeeting.				

[i] Air navigation system Performance-Based Implementation Plan for the CAR Region

[ii]

Grey	*Task not started yet*
Green	*Activity being implemented as scheduled*
Yellow	*Activity started with some delay, but will be implemented on time*
Red	*Activity not implemented on time; mitigation measures are required*

APPENDIX G3

PROJECT FOR THE IMPLEMENTATION OF THE INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW)

SAM Region	PROJECT DESCRIPTION (DP)	DP N° H2	
Programme	**Title of the project**	**Start**	**End**
Aeronautical meteorology *(Programme coordinator: Nohora Arias)*	Implementation of the international airways volcano watch (IAVW) *Project coordinator:* ***Jorge Oscar Leguizamón*** *(Argentina):* *Experts contributing to the project:* *Olver Boolsen (Argentina)* *Walter Ríos (Bolivia)* *Oscar Bermudez (Colombia)* *Lourdes Martínez (Peru)*	December 2011	November 2013
Objective	Ensure that States in the implement the IAVW and the standards and recommended practices of Annex 3 and Part VI – MET of the CAR/SAM ANP, Basic and FASID, concerning the issuance and distribution of the reports of en-route weather phenomena likely to affect the safety of aircraft operations, and the evolution of such phenomena in time and space (SIGMET WS, WV, WC, and WR).		
Scope	The project will comprise all meteorological watch offices (MWO) of the SAM Region listed in Table MET 1B of the CAR/SAM FASID, in coordination with the ACCs/FICs/NOFs, and Volcanic Ash Advisory Centres (VAAC) Buenos Aires and Wellington (New Zealand). Procedures for the issuance of reports and coordination among the affected areas should be defined, as well as transfer of responsibilities between one MWO and others. Procedures will be defined for the transfer of responsibilities and assistance among the CMRE and the MWOs.		
Metrics	Testing of volcanic ash SIGMETs shall result in continuous improvements once project deliverables are available to the States.		
Strategy	All tasks will be carried out by experts nominated by SAM States participating in the project, led by the Project Coordinator and under the supervision of the MET Programme Coordinator through the "GoToMeeting" tool. Upon completion of the tasks, the results will be sent to the MET Programme Coordinator as a final document for submission to, and if necessary approval by, the GREPECAS CRPP through the GREPECAS fast-track procedure. For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
Goals	a) 100% of acceptance of SIGMET tests, regarding transmission and reception of SIGMET WV; and b) No aircraft encounters with volcanic ash clouds in the SAM Region in 2012 and 2013.		
Rationale	The severity, persistence, and increased frequency of volcanic events with ash dispersion in the SAM Region and their repercussions on the provision of air navigation services call for tools to allow the personnel involved in the different air navigation areas to receive, properly use, and disseminate quality information related to such events. Likewise, based on Japan's experience, contingency plans are needed not only for this type of events but also for radioactive clouds when more than one FIR in the Region is involved.		
Related projects	➢ Optimisation of the en-route airspace structure ➢ Implementation of the new flight plan format (FPL) ➢ Implementation of ATFM		

Project Deliverables	Relationship with the performance-based regional plan (PFF)	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
SIGMET guide revised and updated	PFF SAM MET 03	MET programme coordinator and project director		January 2013	The guide will include MWO responsibility handover procedures. The guide is in continuous revision
Regional contingency plan for volcanic activity events	PFF SAM MET 03	MET programme coordinator and project director		November 2012	Prior to its approval by GREPECAS, the ATM, MET, and AIM personnel of the Region shall approve the plan, for which a meeting will be held. This task has been passed to the ATM responsibility
Regional contingency plan for accidental release of radioactive material.	PFF SAM MET 03	MET programme coordinator and project director		November 2013	Prior to its approval by GREPECAS, the ATM, MET, and AIM personnel of the Region shall approve the plan, for which a meeting will be held. This task has been passed to the ATM responsibility
Protocol for the volcanic ash SIGMET exercise	PFF SAM MET 03	MET programme coordinator and project director		December 2012	The protocol for the volcanic ash SIGMET exercise reviewed and updated. On 1 and 2 December 2012 the test was carried out
Results of the exercise	PFF SAM MET 03	MET programme coordinator and project director		December 2012	Based on the results, values may be assigned to the quality of SIGMETs and their exchange as compared with previous exercises.

Project Deliverables	Relationship with the performance-based regional plan (PFF)	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Protocol for the volcanic ash SIGMET exercise	PFF SAM MET 03	MET programme coordinator and project director		December 2013	The protocol for the volcanic ash SIGMET exercise reviewed and updated. The exercises should be carried out each year to keep personnel in continuous training. On 7 and 8 December 2012 the test was carried out
Results of the exercise	PFF SAM MET 03	MET programme coordinator and project director		December 2013	Based on the results, values may be assigned to the quality of SIGMETs and their exchange as compared with previous exercises.
Resources needed	Funds to conduct the meetings and to translate the regional volcanic ash contingency plan and the regional contingency plan in case of accidental release of radioactive material. Likewise, participants must be given facilities to participate in GoTo Meetings.				

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Grey *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

APPENDIX G4

PROJECT FOR THE IMPLEMENTATION OF THE MET INFORMATION QUALITY MANAGEMENT SYSTEM (QMS/MET)

SAM Region	PROJECT DESCRIPTION (DP)		DP N° H3	
Programme	**Title of the Project**		**Start**	**End**
Aeronautical Meteorology *(Programme coordinator: Nohora Arias)*	Implementation of the QMS/MET *Project coordinator:* *Experts contributing to the project:*	***Ricardo Reyes** (Peru)* *Olver Boolsen (Argentina)* *Fernando de Abreu Pinto (Brazil)* *Xenia Guardia (Panama)* *Roberto Salinas (Paraguay)* *Lourdes Martínez (Peru)*	December 2011	December 2013
Objective	Assist States in the implementation of the QMS/MET and certification where applicable. Update and improve the QMS/MET guide to assist States in the production of MET documentation under ISO 9001: 2008, the implementation of Annex 3 and Part VI – MET of the CAR/SAM ANP, and the conduction of audit trials.			
Scope	Establishment and application of a duly organised MET service quality system at each MET unit of all SAM aerodromes listed in CAR/SAM ANP, and compliance with the standards and recommended practices of Annex 3 and the CAR/SAM ANP, Vol. I, Basic, and Vol. II, FASID, Part VI – MET.			
Metrics	Number of AOP aerodromes certified under ISO 9000: 2008, and list of aerodromes and their status of implementation of QMS/MET in each of their units.			
Strategy	All tasks will be carried out by experts nominated by SAM States participating in the project, led by the Project Coordinator and under the supervision of the MET Programme Coordinator through the "GoToMeeting" tool. Upon completion of the tasks, the results will be sent to the MET Programme Coordinator as a final document for submission to, and if necessary approval by, the GREPECAS CRPP through the GREPECAS fast-track procedure. For the purpose of collaborative decision-making, meetings will be held with the areas involved.			
Goals	a) 100% of SAM States have established QMS/MET system in accordance with standard ISO 9001:2008 on 31 October 2012; b) 70% of SAM States apply QMS/MET system in accordance with standard ISO 9001:2008 on 31 October 2012; c) 50% of SAM States have QMS/MET system certified by an organization in accordance with standard ISO 9001:2008 on 31 October 2012; and d) 100% of SAM States have QMS/MET system certified by an organization in accordance with standard ISO 9001:2008 on 31 October 2013.			

Rationale	More accurate and timely meteorological information will optimise flight path planning and prediction, thus improving ATM safety and efficiency; improved aerodrome reports and forecasts will optimise the use of available aerodrome capacity; and meteorological information will minimise the environmental impact of air traffic. Performance management will be an important part of meteorological information quality assurance.
Related projects	➢ Automation ➢ Improved ATM situational awareness

Project Deliverables	**Relationship with the regional performance-based plan (PFF)**	**Responsible Party**	**Status of Implementation**	**Date of Delivery**	**Comments**
Revised and updated QMS/MET guide.	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		November 2013	The practical guide will facilitate the drafting of ISO 9000: 2008 documentation by MET service provider States.
Development of a State survey on MET personnel	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		November 2014	One of the main problems facing MET service provider States is the lack of personnel with the competencies required by WMO and ICAO. State requirements will be officially communicated to ICAO contracting States.
Table of compliance with Annex 3 standards and MET procedures	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		November 2014	In the first instance, strict compliance with ICAO standards related to the provision of MET services will be monitored.

Project Deliverables	Relationship with the regional performance -based plan (PFF)	Responsible Party	Status of Implementation[1]	Date of Delivery	Comments
Table of compliance with the CAR/SAM ANP, Part VI - MET.	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		November 2014	Close monitoring of strict compliance with Part VI– MET of the CAR/SAM ANP.
Audit trials	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		November 2015	Audit trials will be conducted to identify QMS/MET implementation issues and to propose strategies for their resolution.
Resources needed	Funds to conduct audit trials. States could cover the cost of trials by their lead auditors, since the experience obtained will contribute to improve the system. Likewise, participants must be given facilities to participate in GoTo Meetings.				

[1] *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

APPENDIX G5

PROJECT FOR THE OPTIMISATION OF OPMET EXCHANGE, INCLUDING SIGMETs (WS, WV, WC, AND WR), WARNINGS AND METEOROLOGICAL ALERTS

SAM Region	PROJECT DESCRIPTION (DP)		DP N° H4	
Programme	**Title of the project**		**Start**	**End**
Aeronautical meteorology *(Programme coordinator: Nohora Arias)*	*Optimisation of OPMET exchange, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts* *Project coordinator:* ***Cleber Souza Correa*** *(Brazil)* *Experts contributing to the project:* *Aníbal Castro Cárdenas (Bolivia)* *Valdeci Donizeti Juliar da Franca (Brazil)* *Domingo Torres (Ecuador)* *Celestino Lamboglia (Panama)* *Miguel Vara (Peru)* *Warsodikromo Truusje Soetinie (Surinam)* *Tjiettra Akloe (Surinam)* *José Ramón Pereira Bastida (Venezuela)*		December 2011	November 2013
Objective	Achieve at least 95% efficiency in the preparation and dissemination of OPMET information to SAM States by 31 November 2013			
Scope	Correct preparation and timely dissemination of OPMET information involves all MET service units [(EMA(s), OMA(s), MWO(s) and OPMET data banks] of all SAM aerodromes listed in the CAR/SAM ANP.			
Metrics	The percentage of OPMET messages received on time at the Brasilia International OPMET Data Bank (according to Annex 3, Appendix 10, OPMET control considers as messages received those OPMET messages with transit times of 10 minutes) and verification of proper and standard production (quality) of OPMET information at MET services [(EMA(s), OMA(s), and MWO(s)] (Annex 3, in Appendices 3, 4, 5, and 6, contains the (OPMET) message planning tables.			
Strategy	All tasks will be carried out by experts nominated by SAM States (Points of Contact – POC) and by experts contributing to the project, led by the Project Coordinator and under the supervision of the MET Programme Coordinator through State letters sent by the ICAO Lima Office, by e-mail, and the "GoToMeeting" tool. Upon completion of the tasks, the results will be sent to the MET Programme Coordinator as a final document for submission to, and if necessary approval by, the GREPECAS CRPP through the GREPECAS fast-track procedure. For the purpose of collaborative decision-making, meetings will be held with the areas involved.			
Goals	a) Reach 85% in the reception of OPMET data of the SAM Region in the Brasilia on 31/12/12; and 95% on 31/10/13 b) Reach 85% in the reception of OPMET data in each SAM State on 31/12/12; and 95% on 31/10/13			
Rationale	More timely meteorological information will optimise flight path planning and prediction, thus improving ATM system safety and efficiency, pursuant to GREPECAS Conclusion 12/64 (CAR/SAM OPMET EXCHANGE CONTROLS). Meteorological information will also minimise the environmental impact of air traffic.			
Related projects	➢ Automation ➢ Implementation of ATFM			

	➢ Installation of AMHS at MET units having an international OPMET requirement ➢ Implementation of the MET information quality management system (QMS/MET) ➢ Enhanced ATM situational awareness ➢ Implementation of the new flight plan format (FPL)

Project Deliverables	Relationship with the performance-based regional plan (PFF)[i]	Responsible Party	Status of Implementation[ii]	Date of Delivery	Comments
OPMET guide revised and updated	PFF SAM MET 02	MET programme coordinator and project coordinator		September 2012	The OPMET guide prepared by the SAM Office will include procedures for preparing OPMET data and tables containing the AFTN addresses to which OPMET information must be sent worldwide in accordance with the CAR/SAM FASID, thus facilitating the preparation and issuance of MET messages.
Results of coordinated controls of annual SIGMET WV tests	PFF SAM MET 02	POC and BR OPMET data bank		February 2013	The measurement of SIGMET WV messages received on time at the Brasilia International OPMET Data Bank will give the actual percentage of OPMET data, and the verification of the proper preparation of SIGMET WV messages at MWO(s) will permit an assessment of OPMET information quality.
Results of the analysis of coordinated controls of annual SIGMET WV tests	PFF SAM MET 02	MET programme coordinator and project coordinator		May 2013	The results obtained from the coordinated controls of annual SIGMET WV tests will allow programme and project coordinators to adopt, if necessary, corrective action for subsequent coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts.
Results of coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological	PFF SAM MET 02	POC and BR OPMET data bank		August 2013	Timely measurements at the Brasilia International OPMET data bank will provide the actual percentage of OPMET data received, and the verification of the proper preparation of OPMET information at MET services [(EMA(s), OMA(s),

Project Deliverables	Relationship with the performance-based regional plan (PFF)[i]	Responsible Party	Status of Implementation [ii]	Date of Delivery	Comments
alerts					and MWO(s)] will permit to assess the quality of OPMET information.
Results of the analysis of coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts	PFF SAM MET 02	MET programme coordinator and project coordinator		August 2014	The results obtained from coordinated controls of OPMET information, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts will give programme and project coordinators an idea of project results.
Final project report	PFF SAM MET 02	MET programme coordinator and project coordinator		November 2013	The purpose of the final project report to be submitted by the programme coordinator is to enable the Lima SAM Office to check the achievements of the project and propose to the States future measures to maintain the level attained through OPMET controls.
Resources needed	Funds for meetings with project members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen OPMET tests and controls, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems. Likewise, participants must be given facilities to participate in GoToMeetings.				

[i] Air navigation system Performance-Based Implementation Plan for the SAM Region

[ii]
Grey *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

Agenda Item 5 Air Navigation Deficiencies in the CAR/SAM Regions

5.1 Follow-up on Application of the New Uniform Methodology for the Identification, Assessment, and Reporting of Air Navigation Deficiencies

Under this agenda item, the following working paper was discussed:

- WP/18 (Secretariat)

5.1.1 The Meeting took note of the action taken for regional application of the Hazard Identification and Risk Analysis (HIRA). In accordance with GREPECAS guidelines, the Meeting noted that the Secretariat has fostered the use of the HIRA and has also organized training activities such as teleconferences, communication exchanges or State missions in support of the implementation of this methodology by the States.

5.1.2 The Secretariat noted that some States had started to apply this new methodology. However, implementation cannot be considered successful in the Region, since the methodology was not being applied in all States.

5.1.3 In view of the limited use of the revised methodology for the processing of deficiencies, which involves the application of the HIRA process to "U" deficiencies and the revision by ICAO of State action plans for the resolution of deficiencies, the Meeting noted that, according to the Secretariat:

- The revised methodology and process for HIRA application showed marginal application, which could be associated with air navigation service providers' level of SMS maturity or understanding of the aforementioned methodology
- The process for updating and closing deficiencies in the GREPECAS Air Navigation Deficiencies Database GANDD also presented implementation difficulties

5.1.4 In compliance with PPRC draft Conclusion 2/1, the Meeting adopted the changes in the HIRA methodology, as shown in the **Appendix** to this part of the Report.

5.1.5 The Meeting noted that, despite the efforts made by the ICAO Regional Offices to reduce the deficiencies programme, the following difficulties still persisted:

- The GANDD updating process is sometimes complicated, reason why the States do not periodically update the information
- Some deficiencies remain unresolved for a long time in the GANDD
- The main source for deficiency identification were ICAO missions conducted by regional experts, and these missions were no longer being carried out
- Of all renowned organizations that could provide information on deficiencies, only IATA had provided a list of deficiencies at the request of ICAO
- There is a need for ICAO to analyse in more detail the possible improvements to deficiency databases so that the States may provide timely information on the appropriate corrective measures

5.2 Status of Air Navigation Deficiencies in the CAR/SAM Regions

- WP/19 (Secretariat), WP/30 (Paraguay), WP/34 (IATA)

5.2.1 The Meeting reviewed working papers 19, 30 and 34. The Secretariat presented WP/19, containing updated information on the status of "A", "B" and "U" deficiencies in each of the air navigation fields in CAR/SAM States/Territories, and the corrective action taken by the States/Territories.

5.2.2 The Meeting was informed that, according to the established procedures, the NACC and SAM Regional Offices followed-up and updated of the GANDD, based on the reports sent by the States through their GANDD national coordinators, who are assigned a user name and password. Appendix B to WP/19 contains the list of GANDD national coordinators, which, in some cases, needs updating by the States.

5.2.3 "A", "B" and "U" deficiencies corresponding to the CAR Region can be found in ICAO website: http://www.icaonacc.org/gandd2.html and those corresponding to the SAM Region are shown in Appendix A to WP/19.

5.2.4 Paraguay informed that it had made a technical and financial effort to resolve 17 of the 22 "U, A and B" deficiencies contained in the GANDD under all the air navigation fields. In this regard, most deficiencies (14) corresponded to AGA, including the one with a "U" priority.

5.2.5 Regarding corrective action taken to resolve deficiencies, the actions plans to resolve 17 of the deficiencies in all of the fields had been fully completed. Regarding the deficiencies that were still pending, all financial, technical and human resource measures were taken to resolve them. Two "B" priority AGA deficiencies and 3 "A" priority AIS (1), CBS (1) and MET (1) deficiencies were still pending resolution.

5.2.6 The ICAO SAM Regional Office took note of the information provided by Paraguay and informed that it had updated the GANDD in all air navigation fields.

Deficiencies Reported by IATA in the CAR/SAM Regions

5.2.7 The Meeting took note of the information provided by IATA regarding some deficiencies identified in some CAR/SAM States. The list of the deficiencies identified by IATA was presented in Appendix A to WP/34, so that, in accordance with the procedures and methodology established in the GREPECAS Procedural Handbook, the States could analyse them and establish measures to reduce their operational impact.

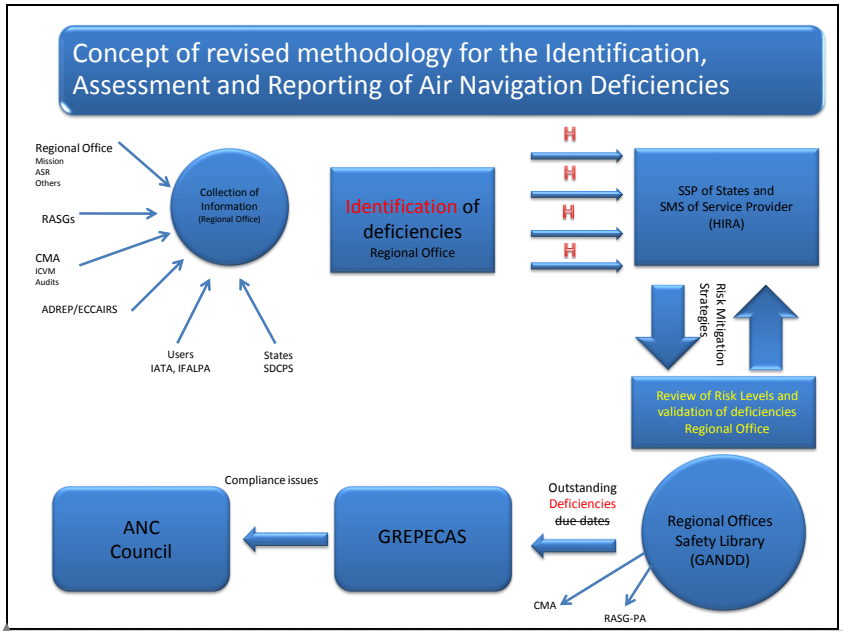
5.2.8 After analysing the deficiencies database, the Meeting agreed that there were opportunities for improving the ICAO uniform methodology for the identification, assessment, and reporting of air navigation deficiencies, and that in recent years, ICAO had implemented a series of management tools that might justify the need to analyse the effectiveness of this programme in greater detail. Accordingly, the Meeting adopted the following conclusion:

CONCLUSION 17/12 **REVISION OF THE ICAO UNIFORM METHODOLOGY FOR THE IDENTIFICATION, ASSESSMENT AND REPORTING OF AIR NAVIGATION DEFICIENCIES**

That ICAO consider conducting a comprehensive revision of the uniform methodology for the identification, assessment and reporting of air navigation deficiencies, identifying opportunities for improving both the database as well as the process itself, in order to generate a more efficient and effective process, with greater participation of the users, and taking into account the existing limitations of the Secretariat for the identification of deficiencies through State missions.

APPENDIX

REVISED METHODOLOGY FOR THE IDENTIFICATION, ASSESSMENT AND REPORTING OF AIR NAVIGATION DEFICIENCIES ~~(HAZARDS)~~
CAR/SAM



1. The Regional Office, upon identifying or receiving a report of a deficiency from sources approved by the Council (State/Territory, IATA, and IFALPA), assesses the report and verifies its validity.

2. The deficiency report duly validated by the corresponding Regional Office is sent to the State concerned through the designated focal point~~, using the Hazard Identification and Risk Assessment (HIRA) Form that appears in **Attachment A** to this procedure~~.

~~3.~~ The State reviews ~~enters~~ the deficiency ~~report into its safety system for the corresponding investigation.~~

~~4.~~3. ~~The State safety system,~~ using its internal procedures, to assesses the risk generated by the hazard ~~deficiency and the underlying factors and hazards,~~ expressed in terms of ~~likelihood~~ probability and severity as established in ICAO Doc 9859, *Safety Management Manual*, so as to:

a) Identify hazards.
~~a)~~b) Determine~~s~~ the safety risk tolerability index.
~~b)~~c) Identify~~ies~~ missing or inadequate defences.
~~c)~~d) Implement~~s~~ mitigation measures to control risk indices or values defined as intolerable, reducing the operational risk to an acceptable level.
~~d)~~e) ~~Disseminates the information according to its procedures~~.

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~~5.~~4. The State will have ~~three months~~ thirty days to ~~return~~ submit to the corresponding Regional Office the Hazard Identification and Risk Assessment (HIRA) form ~~containing the risk mitigation recommendations report (RMRR)~~ that appears in the **Attachment ~~B~~** to this procedure, duly completed ~~and signed~~, and ~~will~~ insert a summary of the developed action plan~~ning~~ in the GANDD.

Note: ~~In case of criterion discrepancies in the risk assessment of the reported deficiency/hazard,~~ Within the following 15 working days of receiving the State feedback the corresponding Regional Office could suggest to the State to review the risk assessment of the analysis done of the reported deficiency.

~~6.~~5. If no information is received from the State ~~about the reported deficiency~~ within ~~a~~ the established period ~~of three months~~, this ~~will be considered as objective evidence of ineffectiveness of the SSP and/or SMS. This~~ information will be reported to the USOAP/CMA, which could increase the level of risk of this State ~~and activate any of the USOAP/CMA intervention tools~~.

~~7.~~6. The Regional Office will inform GREPECAS about the result of the risk mitigation assessment and ~~recommendations~~ actions taken by the State, if any.

~~8.~~7. Based on the result of the analysis of the deficiency, the information could be sent to the Air Navigation Commission or to ICAO Council.

~~*Note: **Attachments C** and **D** contain forms, with an example showing how they should be completed.*~~

~~9.~~8. A statistical report of CAR and SAM deficiencies/hazards will be provided to RASG-PA for inclusion in the annual safety report of that mechanism.

Deficiency: A deficiency is a situation where ~~condition in which~~ a facility, service, or procedure does not comply with ~~is not adjusted to~~ **a regional air navigation plan approved by the Council, or with the related ~~**corresponding**~~ **ICAO standards and recommended practices**, and which situation has a negative impact on the safety regularity and/or efficiency of international civil aviation.*

**Hazard: A hazard is a condition or object that might cause ~~harm~~ death, injuries to personnel, damage to equipment or structures, loss of materials, or a reduction in the capacity to perform a prescribed function.*

Note: For the purpose of aviation safety risk management, the term hazard should be ~~Within this context,~~ considered as a deficiency~~ies are considered as hazards~~.

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ATACHMENT A TO THE APPENDIX A

DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT REPORT	
1. Description of identified deficiency:	
2. State/Territory/Organization :	
3. Report N°:	
4. Date of identification:	
5. Report prepared by:	
6. Air Navigation Area Facility/service involved:	
7. Potential consequences of the hazard caused by the deficiency:	
8. Specific requirement:	
9. Mitigation currently implemented (if known):	
10. Remarks:	

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11. Report prepared by: (ICAO Officer)	

DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT REPORT (CONT.)

RISK LIKELIHOOD	RISK SEVERITY				
	Catastrophic A	Hazardous B	Major C	Minor D	Insignificant E
Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Unlikely 2	2A	2B	2C	2D	2E
Extremely Unlikely 1	1A	1B	1C	1D	1E

5A, 5B, 5C, 4A, 4B, 3A	**Intolerable region (equivalent to U priority deficiencies)** Unacceptable under existing circumstances
5D, 4C, 4D, 3B, 3C, 2A, 2B, 5E, 2C, 4E, 3D	**Tolerable region (equivalent to A priority deficiencies)** Acceptable, based on risk mitigation. Might require a managerial decision.
1A, 1B, 1C, 1D, 1E, 2E, 3E, 2D	**Acceptable region (equivalent to B priority deficiencies)** Acceptable

Likelihood	Is defined as the likelihood of occurrence of an event or unsafe condition
Frequent:	•Likely to occur many times (has occurred frequently)
Occasional:	•Likely to occur some times (has occurred infrequently)
Remote:	•Unlikely, but might occur (occurs rarely)
Unlikely:	•Very unlikely to occur (no occurrence is known)
Extremely unlikely	•Almost unconceivable that the event may occur.

Severity:	Is defined as the possible consequence of an event or unsafe condition, based on the worst case scenario
Catastrophic	•Destroyed equipment •Multiple deaths
Hazardous	•An important reduction in safety margins, physical damage or a workload such that operator scannot perform their tasks in a precise and complete manner. •Serious injury •Major damage to equipment.
Major:	•A significant reduction in safety margins, a reduction in the ability of the operator to respond to adverse operating conditions as a result of an increased workload or as a result of conditions hindering its efficiency. •Serious incident •Injury to individuals

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Minor:	• Interference • Operational limitations • Use of emergency procedures • Minor incidents
Insignificant	• Slight consequences

EXPLANATION OF THE "DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT" FORM

1. **Description of identified deficiency:** Specifies the deficiency identified or the occurrence of the event, validated by the corresponding Regional Office.

2. **State/Territory/Organization:** Identifies the name of the State/Territory/Organization involved.

3. **Report N°:** Identifies the category of the deficiency identified for each State.

4. **Date of identification:** Indicates the DD/MM/YY of the report of the deficiency identified or of the occurrence of the event, as applicable.

5. **Report prepared by:** Indicates the source that identified and reported the deficiency.

6. **Air Navigation Area Facility/service involved or activity:** Specifies the air navigation area directly involved in the identified deficiency. More than one area may be listed.

7. **Potential consequences of the deficiency caused by the deficiency:** Initial assessment of the consequence of the identified deficiency, either by the source reporting the deficiency, or by the Regional Office that sends the report.

8. **Specific requirement:** If known, the specific error or failure that affected the operation is included.

9. **Mitigation currently implemented (if known):** If known, existing defences are included.

10. **Remarks:** Observations or comments on the identified deficiency may be included.

11. **Report prepared by (ICAO Officer):** The reporting ICAO Regional Office is specified.

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ATTACHMENT ~~B~~ TO APPENDIX ~~A~~

SAFETY RISK MITIGATION RECOMMENDATIONS REPORT				
1. Description of identified deficiency:				
2. State/Territory/Organization:				
3. Report N°:				
4. Date of identification:				
5. Level of safety risk before mitigation measures are adopted:				
6. Solution ~~# 1~~				
7. Description of the solution:				
8. Estimated cost of this solution:	**9. Revised risk assessment if only this solution is to be implemented:**	**10. ~~Likelihood~~Probability:**		
$		**11. Severity:**		
		12. Level of safety risk:		
13. Potential implementation problems:				
~~14. Solution # 2~~				
~~15. Description of the solution:~~				
~~16. Estimated cost and time for implementation of this solution~~	**~~17. Revised risk assessment if only this solution is to be implemented:~~**	**~~18.Likelihood:~~**		
~~$~~		**~~19. Severity:~~**		
		~~20. Level of risk:~~		
~~21. Potential implementation problems:~~				

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SAFETY RISK MITIGATION RECOMMENDATIONS REPORT				
~~22. Solution # 3~~				
~~23. Description of the solution:~~				
~~24. Estimated cost and time for implementation of this solution~~ ~~$~~	~~25. Revised risk assessment if only this solution is to be implemented:~~	~~26. Likelihood:~~		
		~~27. Severity:~~		
		~~28. Level of risk:~~		
~~29. Potential implementation problems:~~				
~~30~~14. Recommended solution(s):				
~~3~~15. Estimated cost and estimated time for implementation of recommended solution(s):	$			
~~32~~16. Revised safety risk assessment if implemented as recommended:				

RISK PROBABILITY		RISK SEVERITY				
		Catastrophic A	Hazardous B	Major C	Minor D	Insignificant E
PROBABILITY	Frequent 5	5A	5B	5C	5D	5E
	Occasional 4	4A	4B	4C	4D	4E
	Remote 3	3A	3B	3C	3D	3E
	~~Unlikely~~Improbable 2	2A	2B	2C	2D	2E
	Extremely improbable~~unlikely~~ 1	1A	1B	1C	1D	1E

~~33~~17. Report prepared by (State/Territory/Organization):	

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EXPLANATION OF THE "SAFETY RISK MITIGATION RECOMMENDATIONS REPORT"

The State concerned shall complete the form based on the following explanations:

1. **Description of identified deficiency:** Complete with the same text contained in the deficiency or event occurrence report, validated by the corresponding Regional Office.
2. **State/Territory/Organization:** Complete with the name of the State/Territory/Organization.
3. **Report N°:** Complete with the same code of the identified hazard reported by the Regional Office and to which the risk mitigation recommendations refer.
4. **Date of identification:** Complete with the date (DD/MM/YY) of completion of the form.
5. **Level of safety risk before mitigation measures are adopted:** Complete with the level of risk estimated with the current mitigation measures.
6. **Solution ~~# 1~~:** Identifies the number of solution.
7. **Description of the solution:** Complete with a brief description of the first solution to be implemented.
8. **Estimated cost of this solution:** Complete with the estimated cost of implementing the first solution.
9. **Revised safety risk assessment if only this solution is to be implemented:** Associated to boxes 10, 11 and 12.
10. **~~Likelihood~~Probability:** Complete with the coded and plain-language likelihood index that would be achieved with the implementation of this mitigation measure.
11. **Severity:** Complete with the coded and plain-language severity index that would be achieved with the implementation of this mitigation measure.
12. **Level of safety risk:** Complete with the coded and plain-language tolerability index resulting from the implementation of this mitigation measure.
13. **Potential implementation problems:** Complete with a brief description of the potential implementation problems that might prevent the application of the identified solution.

~~14. **Solution # 2:** Identifies the number of solution or scenario.~~

~~15. **Description of the solution:** Complete with a brief description of the second solution to be implemented.~~

~~16. **Estimated cost and time for implementation of this solution:** Complete with the estimated cost of implementing the second solution.~~

~~17. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 18, 19, and 20.~~

~~18. **Likelihood:** Complete with the coded and plain-language likelihood index that would be achieved with the implementation of this mitigation measure.~~

~~19. **Severity:** Complete with the coded and plain-language severity index that would be achieved with the implementation of this mitigation measure.~~

~~20. **Level of risk:** Complete with the coded and plain-language tolerability index resulting from the implementation of this mitigation measure.~~

~~21. **Potential implementation problems:** Complete with a brief description of the potential implementation problems that might prevent the implementation of the identified solution.~~

~~22. **Solution # 3:** Identifies the number of solution or scenario.~~

~~23. **Description of the solution:** Complete with a brief description of the third solution to be implemented.~~

~~24. **Estimated cost and time for implementation of this solution:** Complete with the estimated cost of implementing the third solution.~~

~~25. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 26, 27 and 28.~~

~~26. **Likelihood:** Complete with the coded and plain-language likelihood index that would be achieved with the implementation of this mitigation measure.~~

~~27. **Severity:** Complete with the coded and plain language severity index that would be achieved with the implementation of this mitigation measure.~~

~~28. **Level of risk:** Complete with the coded and plain language tolerability index resulting from the implementation of this mitigation measure.~~

~~29. **Potential implementation problems:** Complete with a brief description of the potential implementation problems that might prevent the implementation of the identified solution.~~

~~30.~~14. **Recommended solution(s):** Complete with the solution(s) to be implemented for reducing the tolerability index to an acceptable level.

~~31.~~15. **Estimated cost and time for implementation of the recommended solution(s):** Complete with the estimated cost of the solutions to be implemented.

~~32.~~16. **Revised safety risk assessment if implemented as recommended:** Complete with the risk assessment once the solution(s) described above has (have) been implemented.

~~33.~~17. **Report prepared by (State/Territory/Organization):** Complete with the name of the corresponding aeronautical authority or individual or area generating the report.

~~– END –~~

Agenda Item 6 Matters Related to the Organization of GREPECAS

Under this agenda item the following working paper was discussed:

- WP/20 (Secretariat)

6.1 The Meeting took note of the inclusion of two additional tasks in the PPRC work programme. The first one corresponded to the collection, monitoring and reporting of implementation performance measurements to be posted on the regional performance dashboard of the ICAO CAR and SAM Regional Offices websites. The second task was to ensure that the programmes and projects are aligned with the ASBU modules, which were approved at the PPRC/2 Meeting. In this respect, the Meeting approved the Sixth Edition of the GREPECAS Procedural Handbook (Version 1.2), containing the amendments to the PPRC work programme, as shown in the **Appendix** to this part of the Report. Accordingly, the Meeting formulated the following decision:

DECISION 17/13 APPROVAL OF AMENDMENT OF THE GREPECAS PROCEDURAL HANDBOOK

Version 1.2 of the Sixth Edition of the GREPECAS Procedural Handbook, as shown in Appendix to this part of the Report is approved.

APPENDIX

PROCEDURAL HANDBOOK

Seventh Edition – 2014

Version 1.2

CAR/SAM PLANNING AND

IMPLEMENTATION REGIONAL GROUP

(GREPECAS)

PROCEDURAL HANDBOOK

Seventh Edition – 2014

Version 1.2

The issue of amendments is communicated regularly by the GREPECAS Secretary through regular correspondence with States and the ICAO website, which holders of this publication should consult. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

AMENDMENTS			
No.	Date applicable	Date entered	Entered by

CORRIGENDA			
No.	Date of issue	Date entered	Entered by

INTRODUCTION

The CAR/SAM Planning and Implementation Regional Group (GREPECAS) was established by the ICAO Council in 1990 as recommended by the Second CAR/SAM Regional Air Navigation Meeting in 1989 (action by Council on Recommendation 14/6 of the CAR/SAM/2 RAN Meeting is set out in Supplement No. 1 to Doc 9543, CAR/SAM/2).

The Procedural Handbook contains information on the role, organization and operation of GREPECAS as well as its different programmes and projects. The Handbook will serve States and international organizations when planning and managing resources for their participation in the Group.

This Procedural Handbook provides general guidelines and is approved by GREPECAS.

The Secretary of this body may develop specific procedures and forms permitting the effective management of the GREPECAS mechanism. These procedures should not contradict this Handbook in any way.

The Handbook should be updated periodically to accommodate relevant changes and developments.

CAR/SAM PLANNING AND IMPLEMENTATION REGIONAL GROUP (GREPECAS)

1. Background

1.1 The CAR/SAM Planning and Implementation Regional Group was established by the ICAO Council (Recommendation 14/6 – SP CAR/SAM 1989, Doc 9543).

2. Terms of Reference

2.1 In accordance with C-WP/13135, Council Decisions C-DEC 183/9 dated 18 March 2008, and C-DEC 190/4 dated 28 May 2010, the terms of reference of GREPECAS are as follows:

a) continuous and coherent development of the CAR/SAM Air Navigation Plan and other relevant regional documentation in a manner that is harmonized with adjacent regions, consistent with ICAO SARPs and reflecting global requirements;

b) facilitation of the implementation of air navigation systems and services as identified in the CAR/SAM Air Navigation Plan, giving due priority to air safety;

c) identification and aiding in addressing specific deficiencies in the air navigation field; and

d) coordination of safety issues with Regional Air Safety Groups (RASGs).

2.2 **In order to meet the Terms of Reference the Group shall:**

a) review and propose, when necessary, the target dates for implementation of facilities, services and procedures to ensure the coordinated development of the Air Navigation System in the CAR and SAM Regions;

b) assist the ICAO Regional Offices with providing services in the CAR and SAM Regions with their assigned task of fostering implementation of the CAR/SAM Regional Air Navigation Plan;

c) in line with the Global Aviation Safety Plan (GASP), ensure the conduct of any necessary systems performance monitoring;

d) identify specific deficiencies in the air navigation field, especially in the context of safety, and propose corrective action;

e) promote the development and implementation of an action plan by States to resolve identified deficiencies, where necessary;

f) develop amendment proposals for the update of the CAR/SAM Air Navigation Plan necessary to satisfy any changes in requirements, thus removing the need for regular regional air navigation meetings;

g) monitor implementation of air navigation facilities and services, and where necessary, ensure interregional harmonization, taking due account of cost/benefit analysis, business case development, environmental benefits and financing issues;

h) examine human resource planning and training issues and ensure that the human resource development capabilities in the Regions are compatible with the CAR/SAM Regional Air Navigation Plan;

i) review the Statement of Basic Operational Requirements and Planning Criteria (BORPC) and recommend such changes as may be required in the light of developments to the Air Navigation Commission;

j) invite financial institutions, as required, on a consultative basis and when considered appropriate in the planning process, to participate in this work;

k) ensure close cooperation with relevant organizations and State groupings to optimize the use of available expertise and resources;

l) conduct the above activities in the most efficient manner possible with a minimum of formality and documentation, and call meetings of GREPECAS only when the Secretary and the Chairperson, through the Programme and Project Review Committee, are convinced that it is necessary to do so; and

m) coordinate with the Regional Aviation Safety Group – Pan America (RASG-PA).

3. Position in ICAO

3.1 GREPECAS is the guiding and co-ordinating body for all activities conducted within ICAO concerning the air navigation system for the CAR and SAM Regions but does not assume authority vested in other ICAO bodies, except where such bodies specifically delegate their authority. The activities of GREPECAS shall be subject to review by the ICAO Council.

4. Composition and organization of GREPECAS

4.1 GREPECAS is composed of all States providing air navigation services in the CAR/SAM Regions. However, a group of States may choose to have common representation.

4.2 The following international organizations may be invited, as observers, to participate on a regular basis: ACI**,** ALTA, ARINC, ASSI**,** CANSO, CASSOS, COCESNA, ECCAA, IAOPA, IATA, IBAC, IFALPA IFATCA, LACAC, PAIGH, SITA and WMO.

4.3 States that do not provide air navigation services in the CAR/SAM Regions may participate as observers in GREPECAS meetings.

4.4 Other CAR/SAM International Organizations and/or bodies may also participate when invited specifically by GREPECAS.

4.5 States shall ensure that the representatives designated as members of GREPECAS have knowledge and experience with regard to supplying the full range of international air navigation systems and serving in GREPECAS for a period long enough to maintain continuity of its activities. During the meetings of GREPECAS, the designated representatives maybe supported by technical advisers , if necessary..

4.6 The Group shall appoint a Chairperson and a Vice-Chairperson. The Chairperson, in close coordination with the ICAO Regional Directors from the South America and NACC Regional Offices, shall make necessary arrangements for the most efficient work of the Group.

4.7 In order to ensure necessary continuity in the work of GREPECAS, and unless otherwise determined by special circumstances, the Chairperson and the Vice-Chairperson of GREPECAS shall assume their functions at the end of the meeting at which they are elected and normally serve for a period of three years. They can also be re-elected once, if considered and approved by the Group. The Chairperson shall:

a) attend, to the extent possible, all meetings of GREPECAS under his/her chairpersonship;

b) participate with the Secretariat in the development of GREPECAS meeting reports; and

c) present the GREPECAS meeting reports under his/her chairpersonship.

4.8 **Appendix A** to this document presents the structure of GREPECAS.

5. Working methodology

5.1 The GREPECAS work programme shall be developed through project management methodology. The GREPECAS Programmes and Projects Review Committee (PPRC) shall be the authority to be provided account of and to review the progress of each of the projects of the mechanism.

5.2 The Regional Officers will coordinate the programmes, and State experts shall coordinate the projects. The programmes cover different air navigation fields based on the Global Air Navigation Plan and the Global ATM Operational Concept, and in accordance with ICAO programmes under the Strategic Objectives *Safety* and *Environmental Protection and Sustainable Development of Air Transport*; namely, AGA, AIM, ATM, CNS, MET and SAR.

5.3 The respective CAR or SAM Regional Office will designate programme coordinators for projects under their responsibility. To assist in each project's design, follow-up and achievement of objectives, the Regional Office's programme coordinator will count with support of the project coordinators assigned among the States in its area of accreditation. Each Regional Office will use its own implementation mechanisms to achieve the objectives of the programmes and projects of its Region.

5.4 The projects relate to their generic definition, and that are not limited to the ICAO Technical Cooperation projects, which are an example of a type of project. Technical cooperation projects are an implementation tool along with working groups, Special Implementation Projects (SIP), etc. GREPECAS projects will have the following components, which must be documented in a brief project document and schedule:

a) Objectives
b) Description
c) Activities
d) Responsibilities
e) Resources – experts and budget
f) Results – outputs, deliverables
g) Schedule – Programme, milestones, terms
h) Dependencies
i) Metric/Indicators
j) Risks

5.5 To achieve the results of a given project resource allocation for its implementation is necessary. Components of these resources are the project coordinators and experts that the States/International Organizations provide. States/International Organizations, upon designating their coordinators and experts, must ensure that the designees are provided with the time necessary to conduct appropriate coordination and participate in the various activities of the project.

6. Programmes and Projects Review Committee (PPRC)

6.1 A key component of the organization of GREPECAS is the Programmes and Projects Review Committee (PPRC). The PPRC is the accountable authority that reviews the progress of the programmes and projects.

6.2 With the aim of complying with the work programme, the PPRC:

a) identifies the need for new projects;
b) prioritizes resource allocation;
c) authorizes the establishment of new projects;
d) recommends actions to eliminate obstacles encountered in achieving proposed objectives; and
e) ensures that the programmes and projects are consistent with and aligned to the terms of reference of GREPECAS.

6.3 **Appendix B** presents the terms of reference and working programme of the Programmes and Projects Review Committee.

6.4 The PPRC is composed of the GREPECAS Chairperson and Vice-Chairperson, the Secretary and Co-Secretary, representatives from 16 CAR/SAM States (8 from CAR and 8 from SAM), the international organizations listed in paragraph 4.2 of this Handbook, and States from other regions invited to participate in the meetings as Observers when relevant to the order of business.

6.5 The PPRC meetings will be held as necessary, either through teleconferences or in-person, depending on efficiency and effectiveness and the GREPECAS budget. Preference will be given to teleconference meetings, and at least one annual in-person meeting will be conducted, preferably at either the CAR or SAM Regional Offices.

7. Project meetings and interregional coordination

7.1 With the aim of coordinating and exchanging information, it is possible that the various projects will require regional meetings. Priority will be given to teleconference meetings; however, in-person meetings may also be necessary. In this case, the Regional Offices will make use of existing fora in order to minimize costs, and preferably hold meetings at the Regional Offices, if feasible.

7.2 The Regional Offices programme coordinators are charged with ensuring coordination between the projects of both regions. If necessary, CAR/SAM meetings can be convened to coordinate interregional coordination topics and, preferably, existing fora will be used to avoid meeting proliferation and minimize costs.

8. Regional coordination

8.1 The Chairperson and the GREPECAS Secretary, in coordination with the Co-Secretary, shall take all necessary steps to establish and maintain a close relationship with relevant international and sub-regional organizations in all pertinent fields of aviation activity to ensure optimization of capacity and efficient development of procedures.

9. GREPECAS meetings

9.1 Languages

9.1.1 The languages of the meetings of the GREPECAS shall be English and Spanish. The meeting reports and supporting documentation for GREPECAS meetings will be prepared in English and Spanish.

9.2 Secretariat support of GREPECAS meetings

9.2.1 The GREPECAS Secretary, supported by the GREPECAS Co-Secretary, shall provide necessary secretariat assistance to the Group and serve as its communication link with all interested parties. In order to achieve this, the following actions will be taken:

a) the meeting agenda shall be limited to those items that are sufficiently mature for a GREPECAS decision or conclusion;

b) documentation submitted by States, international organizations, and GREPECAS Programmes for action by GREPECAS shall always include a concrete and substantiated proposal for a conclusion or a decision for GREPECAS consideration for endorsement, amendment or rejection, if applicable;

c) documentation should be sent electronically 45 days before the meeting to permit timely processing in both English and Spanish. All documentation should be submitted 21 days before the meeting, at the latest, for proper publishing and distribution. It should be noted that those papers received after this 21-day period may not be accepted by the Secretariat, however, they may be presented as information papers. All Meeting documentation will be available on the web at least 15 days prior to meetings;

d) in plenary session, GREPECAS meetings will approve conclusions and decisions, which shall include brief lead-in text for better understanding and a reference to which earlier Conclusion(s)/Decision(s) is superseded, if applicable, as well as noting when they can be deleted from the GREPECAS List of Valid Conclusions and Decisions;

e) the full report will be completed by the Secretary and approved by the Chairperson for transmission within four weeks after the end of the meeting;

f) upon completion of the meeting, a one-page summary describing the outcome will be prepared and disseminated to all Air Navigation Bureau (ANB) sections as well as relevant sections of Air Transport Bureau (ATB) and Technical Co-operation Bureau (TCB), including a detailed action plan for the implementation of the conclusions and decisions adopted by the Group; and

g) GREPECAS relations with States and International Organizations, as well as relations with CAR or SAM bodies and organizations, will normally be conducted through the ICAO Regional Director of the Office of accreditation.

10. Meeting documentation

10.1 Distribution of the supporting documentation of GREPECAS and its Programmes, as well as the reports of the meetings, will be posted on the NACC and SAM Regional Offices websites under the GREPECAS option.

10.2 Documentation may be presented by States, International Organizations or the Secretariat, in the following formats:

a) **Working papers** contain material with a draft decision, conclusion or invitation for the meeting to take a certain action. The content of the topics must be centered on air navigation subjects (AGA, AIM, ATM, CNS, MET and SAR), coordination aspects with RASG-PA, or GREPECAS administrative matters.

b) **Information papers** are submitted to provide the meeting with information for which no action is required and will normally not be discussed at the meeting.

c) **"Flimsies"** are documentation prepared on an ad hoc basis in the course of a meeting to assist the meeting with discussion on a specific matter or in the drafting of a text for a conclusion or decision.

d) D**iscussion papers** are originated and distributed during the meeting.

11. **Meeting output**

11.1 Conclusions deal with matters, which in accordance with the Group's terms of reference, directly merit the attention of States or require further action to be initiated by ICAO in accordance with established procedures.

11.2 Decisions deal with matters of concern only to the GREPECAS.

Note: in order to qualify as such, a decision or conclusion shall be able to respond clearly to the "3W" criterion (What, Who and When).

12. **Schedule and venue of GREPECAS meetings**

12.1 GREPECAS will meet every three years; its duration will be determined by the scope of the agenda, however, a three-day standard will be endeavored, if possible. Meetings shall normally be convened at locations within the CAR and SAM Regions, alternatively. A meeting convening letter shall be sent by the Regional Offices **90** days prior to the meeting, including the draft agenda together with explanatory notes.

13. **Fast-track procedure**

13.1 To enable greater efficiency for the work of GREPECAS, draft conclusions and decisions can be approved through correspondence. Unless the Secretariat considers it otherwise, the usual procedure where no response indicates agreement will apply.

14. **Reporting deficiencies**

14.1 In order to enable GREPECAS to make detailed assessments of deficiencies, States and appropriate International Organizations, including IATA and IFALPA, are expected to provide information they have to the corresponding ICAO Regional Office for appropriate action, including action at PIRG meetings. The information should include, at a minimum:

a) description of the deficiency
b) requirement
c) risk assessment
d) solution and/or mitigating measures
e) time-lines
f) responsible party
g) agreed action to be taken
h) action already taken

14.2 On 30 November 2001, the ICAO Council approved the *Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies*, which is presented as **Appendix C** to this Procedural Handbook**.**

14.3 A detailed description of the methodology is found in the document on *Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies* published on the Regional Offices websites under the GREPECAS option.

15. Scrutiny Working Group (GTE)

15.1 The GREPECAS GTE is composed by specialists from the CAR/SAM Regions qualified in the analysis and assessment of 300 ft or more large height deviations (LHD), as defined in ICAO Document 9574.

15.2 This Group in addition fulfills an important coordination task with the regional monitoring agency (CARSAMMA) for the compilation, purging and review of data regarding LDH, by identifying deviation trends and recommending corrective actions with the aim of improving safety.

15.3 The GTE will prepare an annual executive report for the Secretary of GREPECAS, containing statistical information related with LHD, as well as recommendations on the risk mitigating measures deemed pertinent to take.

16. Coordination with RASG-PA

16.1 GREPECAS will provide the RASG-PA mechanism with a working paper containing statistical information on the process and/or projects generating valuable information on the safety of air navigation systems.

16.2 The GREPECAS and RASG-PA Secretaries will ensure efficient coordination is maintained between the two groups as necessary to avoid duplication of effort and achieve the highest level of effectiveness. As a rule and when required, the fast track approval procedure will be used.

17. Terminology

17.1 The terminology applicable to GREPECAS is included in **Appendix D**.

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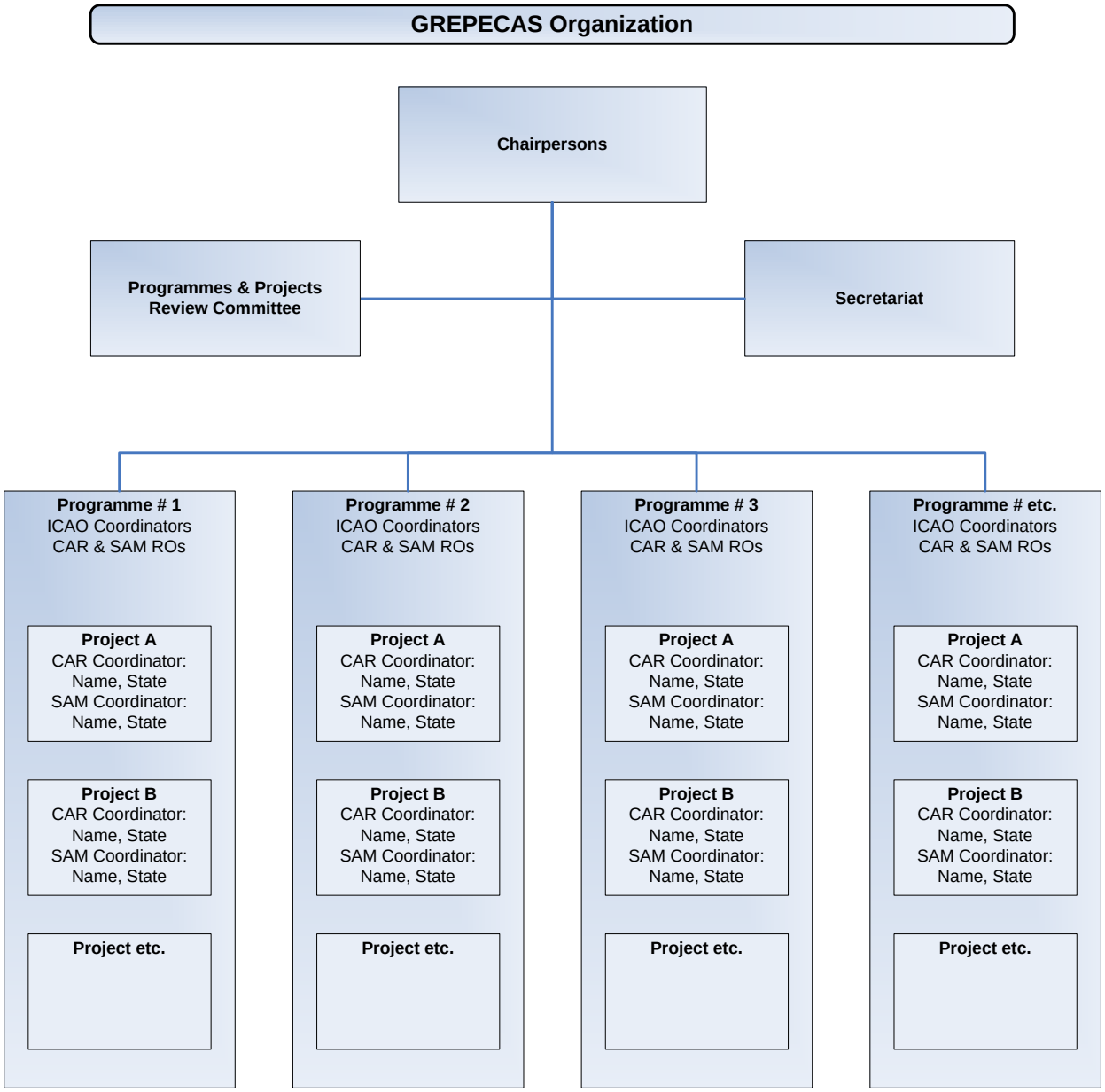
APPENDIX A


GREPECAS Organization
Chairpersons
Programmes & Projects Review Committee
Secretariat
Programme # 1
ICAO Coordinators
CAR & SAM ROs
Project A
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project B
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project etc.
Programme # 2
ICAO Coordinators
CAR & SAM ROs
Project A
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project B
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project etc.
Programme # 3
ICAO Coordinators
CAR & SAM ROs
Project A
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project B
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project etc.
Programme # etc.
ICAO Coordinators
CAR & SAM ROs
Project A
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project B
CAR Coordinator: Name, State
SAM Coordinator: Name, State
Project etc.

APPENDIX B

PROPOSED REVISED GREPECAS PROGRAMMES AND PROJECTS REVIEW COMMITTEE TERMS OF REFERENCE AND WORK PROGRAMME

1. Introduction

PPRC activities are performed by high-level member State representatives on behalf of all GREPECAS member States. The representatives selected to the PPRC are envisioned to focus their activities on the review of GREPECAS programmes and projects with regard to objectives, implementation progress, challenges encountered results achieved and not duplicate the work performed by the technical experts. The PPRC will make recommendations for approval by GREPECAS on programme and project results, as well as the establishment, modification and termination of programmes and projects.

2. Membership

The PPRC comprises the GREPECAS Chairperson, Vice-Chairperson, Secretary and Co-Secretary, eight States of the CAR Region and eight States of the SAM Region identified by the Directors of Civil Aviation of the States[1]. Other GREPECAS member States may participate in meetings if the agenda includes a topic of interest. The international organizations listed in the GREPECAS Procedural Handbook and affected States of other Regions may participate in meetings as Observers when relevant to the agenda.

3. The Terms of Reference of the Committee are:

a) coordinate and harmonize GREPECAS administrative matters and participate in its internal management and scheduling of events;

b) review and approve the planning, progress and execution of programmes and projects to ensure their alignment with the GREPECAS terms of reference, ICAO strategic objectives, business plan and global air navigation plan; and

c) follow-up on high-risk safety deficiencies and take action to promote their resolution.

[1] The PPRC Member States for the CAR Region are, Cuba, Dominican Republic, Haiti, Honduras (in representation of Central America in the rotation scheme and as selected by the COCESNA Executive Committee), Jamaica, Mexico, Trinidad and Tobago and United States selected by Conclusion 4/1 of the Fourth Meeting of Directors of Civil Aviation of North America, Central America and the Caribbean (NACC/DCA/4) held in San Pedro Sula, Honduras, from 20 to 24 June 2011. The PPRC Member States of the SAM Region are Argentina, Bolivia, Brazil, Chile, Colombia, Panama, Paraguay and Venezuela as ratified at the Twelfth Meeting of Civil Aviation Authorities of the SAM Region (RAAC/12), held in Lima, Peru, from 3 to 6 October 2011 (ref. paragraph 2.3.5 of the Final Report).

4. In order to comply with its Terms of Reference the Committee shall:

a) review and propose amendments to the GREPECAS Procedural Handbook;

b) review the GREPECAS work methodology and propose specific actions to improve its performance;

c) follow-up the programmes and projects on a continuous basis and, if necessary, intervene in project development to ensure that results are achieved according to approved timeframes;

d) ensure that the programmes and projects are aligned with the ICAO Aviation System Block Upgrades (ASBU) modules;

e) prepare reports on PPRC activities, progress and results of programmes and projects for each GREPECAS meeting and annual GREPECAS reports in between GREPECAS meetings;

f) collect metrics and inform on the impact in the implementation of the projects presented under a regional performance dashboard in the ICAO CAR and SAM Regional Offices websites;

g) prepare the draft agenda for GREPECAS meetings; and

h) in cases of high-risk safety deficiencies, request the respective ICAO Regional Office to request the Air Navigation Bureau to inform the Air Navigation Commission.

APPENDIX C

UNIFORM METHODOLOGY FOR THE IDENTIFICATION, ASSESSMENT AND REPORTING OF AIR NAVIGATION DEFICIENCIES

(Approved by the Council on 30 November 2001)

1. INTRODUCTION

1.1 Based on the information resulting from the assessment carried out by ICAO on the input received from various regions regarding deficiencies in the air navigation field, it became evident that improvements were necessary in the following areas:

a) collection of information;

b) safety assessment of reported problems;

c) identification of suitable corrective actions (technical / operational / financial / organizational), both short-term and long-term; and

d) method of reporting in the reports of ICAO planning and implementation regional groups (PIRGs).

1.2 This methodology is therefore prepared with the assistance of ICAO PIRGs and is approved by the ICAO Council for the efficient identification, assessment and clear reporting of air navigation deficiencies. It may be further updated by the Air Navigation Commission in the light of the experience gained in its utilization.

1.3 For the purpose of this methodology, the definition of deficiency is as follows:

A *deficiency* is a situation where a facility, service or procedure does not comply with a regional air navigation plan approved by the Council, or with related ICAO Standards and Recommended Practices, and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation.

2. COLLECTION OF INFORMATION

2.1 Regional office sources

2.1.1 As a routine function, the regional offices should maintain a list of specific deficiencies, if any, in their regions. To ensure that this list is as clear and as complete as possible, it is understood that the regional offices take the following steps:

a) compare the status of implementation of the air navigation facilities and services with the regional air navigation plan documents and identify facilities, services and procedures not implemented;

b) review mission reports with a view to detecting deficiencies that affect safety, regularity and efficiency of international civil aviation;

c) make a systematic analysis of the differences with ICAO Standards and Recommended Practices filed by States to determine the reason for their existence and their impact, if any, on safety, regularity and efficiency of international civil aviation;

d) review aircraft accident and incident reports with a view to detect possible systems or procedures deficiencies;

e) review inputs, provided to the regional office by the users of air navigation services on the basis of Assembly Resolution A33-14, Appendix M;

f) assess and prioritize the result of a) to e) according to paragraph 4;

g) report the outcome to the State(s) concerned for resolution; and

h) report the result of g) above to the related PIRG for further examination, advice and report to the ICAO Council, as appropriate through PIRG reports.

2.2 States' sources

2.2.1 To collect information from all sources, States should, in addition to complying with the Assembly Resolution A31-10, establish reporting systems in accordance with the requirements in Annex 13, paragraph 7.3. These reporting systems should be non-punitive in order to capture the maximum number of deficiencies.

2.3 Users' sources

2.3.1 Appropriate International organizations, including the International Air Transport Association (IATA) and the International Federation of Air Line Pilots' Associations (IFALPA), are valuable sources of information on deficiencies, especially those that are safety related. In their capacity as users of air navigation facilities they should identify facilities, services and procedures that are not implemented or are unserviceable for prolonged periods or are not fully operational. In this context it should be noted that Assembly Resolution A33-14, Appendix M and several decisions of the Council obligate users of air navigation facilities and services to report any serious problems encountered due to the lack of implementation of air navigation facilities or services required by regional plans. It is emphasized that this procedure, together with the terms of reference of the PIRGs should form a solid basis for the identification, reporting and assisting in the resolution of non-implementation matters.

3. REPORTING OF INFORMATION ON DEFICIENCIES

3.1 In order to enable the ICAO PIRGs to make detailed assessments of deficiencies, States and appropriate International organizations including IATA and IFALPA, are expected to provide the information they have to the ICAO regional office for action as appropriate, including action at PIRG meetings.

3.2 The information should at least include: description of the deficiency, risk assessment, possible solution, time-lines, responsible party, agreed action to be taken and action already taken.

3.3 The agenda of each PIRG meeting should include an item on air navigation deficiencies, including information reported by States, IATA and IFALPA in addition to those identified by the regional office according to paragraph 2.1 above. Review of the deficiencies should be a top priority for each meeting. The PIRGs, in reviewing lists of deficiencies, should make an assessment of the safety impact for subsequent review by the ICAO Air Navigation Commission.

3.4 In line with the above, and keeping in mind the need to eventually make use of this information in the planning and implementation process, it is necessary that once a deficiency has been identified and validated, the following fields of information should be provided in the reports on deficiencies in the air navigation systems. These fields are as follows and are set out in the reporting form attached hereto.

a) Identification of the requirements

As per ICAO procedures, Regional Air Navigation Plans detail inter alia air navigation requirements including facilities, services and procedures required to support international civil aviation operations in a given region. Therefore, deficiencies would relate to a requirement identified in the regional air navigation plan documents. As a first item in the deficiency list, the requirements along with the name of the meeting and the related recommendation number should be included. In addition, the name of the State or States involved and/or the name of the facilities such as name of airport, FIR, ACC, TWR, etc. should be included.

b) Identification of the deficiency

This item identifies the deficiency and would be composed of the following elements:

i) a brief description of the deficiency;

ii) date deficiency was first reported; and

iii) appropriate important references (meetings, reports, missions, etc).

c) Identification of the corrective actions

In the identification of the corrective actions, this item would be composed of:

i) a brief description of the corrective actions to be undertaken;

ii) identification of the executing body;

iii) expected completion date of the corrective action[2*]; and

iv) when appropriate or available, an indication of the cost involved.

[*] It should be noted that a longer implementation period could be assigned in those cases in which the expansion or development of a facility was aimed at serving less frequent operations or entailed excessive expenditures.

4. ASSESSMENT AND PRIORITIZATION

4.1 A general guideline would be to have three levels of priority organized on the basis of safety, regularity and efficiency assessment as follows:

"U" priority = Urgent requirements having a direct impact on safety and requiring immediate corrective actions.

Urgent requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is urgently required for air navigation safety.

"A" priority = Top priority requirements necessary for air navigation safety.

Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

"B" priority = Intermediate requirements necessary for air navigation regularity and efficiency.

Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

5. MODEL REPORTING TABLE FOR USE IN THE REPORTS OF PIRGS

5.1 Taking the foregoing into account, the model table at the Appendix is for use by PIRGs for the identification, assessment, prioritization, etc., of deficiencies. It might be preferred that a different table would be produced for each of the different topics i.e. AGA, ATM, SAR, CNS, AIS/MAP, MET. However, all tables should be uniform.

6. ACTION BY THE REGIONAL OFFICES

6.1 Before each PIRG meeting, the regional office concerned will provide advance documentation concerning the latest status of deficiencies.

6.2 It is noted that the regional offices should document serious cases of deficiencies to the Air Navigation Commission (through ICAO Headquarters) as a matter of priority, rather than waiting to report the matter to the next PIRG meeting, and that the Air Navigation Commission will report to the Council.

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE …. FIELD IN THE ….. REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action***
Requirement of Part.., paragraph (table)… of the air navigation plan	Terra X Terra Y	Speech circuits not implemented Villa X - Villa Y	12 Dec. 2..X	Coordination meeting between Terra X and Terra Y on 16 July 2..X to finalize arrangements to implementation circuit via satellite	Implementation of direct speech circuit via satellite	Terra X	20 Aug. 2..X	A

* Priority for action to remedy a deficiency is based on the following safety assessments:

"U" priority = Urgent requirements having a direct impact on safety and requiring immediate corrective actions.

Urgent requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is urgently required for air navigation safety.

"A" priority = Top priority requirements necessary for air navigation safety.

Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

"B" priority = Intermediate requirements necessary for air navigation regularity and efficiency.

Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

APPENDIX D

TERMINOLOGY

The following is a terminology guide (in English and Spanish) to be used when preparing documentation to be presented for the review of the GREPECAS and its Contributory Bodies Meetings:

Terminology

English	**Spanish**
Addendum	Addenda
Ad hoc	Ad hoc
Agenda Item #	Cuestión # del Orden del Día
Agenda	Orden del Día
Appendix	Apéndice
Attachment (of an Appendix)	Adjunto (de un Apéndice)
Contributory Body	Órgano Auxiliar
Corrigendum	Corrigendo
Discussion Paper (DP)	Nota de Discusión (ND)
Draft Agenda	Orden del Día Provisional
Draft Conclusion	Proyecto de Conclusión
Draft Decision	Proyecto de Decisión
Draft Report	Informe Provisional
Explanatory Notes	Notas Aclaratorias
Final Report	Informe Final
Flimsy	Flimsy
Historical	Reseña
Information Paper (IP)	Nota de Información (NI)
International organizations	Organizaciones Internacionales
Implementation	Implantación
Order of Business (OB)	Orden del Día (OD)
Revised	Revisado
Supplement	Suplemento
Working Paper (WP)	Nota de Estudio (NE)

Note for the Secretariat in the preparation of Documentation:

Appendixes are sorted in alphabetical order: **A, B, C, D…**
In the event of surpassing the alphabet the following criteria will be used also in alphabetical order: **AA, BB, CC, DD…**
The Attachments to an Appendix will be sorted in numerical order: **1, 2, 3, 4 …**

CLASSIFICATION OF THE STATUS OF GREPECAS CONCLUSIONS AND DECISIONS:	**CLASIFICACIÓN DEL ESTADO DE LAS CONCLUSIONES Y DECISIONES DEL GREPECAS**
Valid	Válida
Completed	Finalizada
Superseded	Sustituida

- END -

Agenda Item 7: Other Business

Under this agenda item, the following working and information papers were discussed:

- WP/35 (IATA), WP/36 (IATA), IP/09 (Bolivia), IP/07 (Bolivia)

Filed Flight Plan (FPL) errors

7.1 The Meeting took note that based on the analysis carried out in coordination with some States and airlines, different possible causes of missing, duplicate or inaccurate FPLs had been identified. Accordingly, the study for the mitigation of problems would continue and would be extended, if possible, to more States and airlines.

7.2 Likewise, the Meeting took note of the possibilities of failure due to human factors, which increased when the departure aerodrome was a regional hub, an aerodrome with heavy traffic, or when, due to local procedures, ground staff had to constantly modify the FPL to make last-minute changes (change of route due to weather, fleet changes, slot changes, etc.).

7.3 IATA informed that it was encouraging airlines and States to meet the requirements concerning FPL transmission and, where applicable, message updates, thus reducing the possibility of error in terms of delays, changes and cancellations directly from the airline's operations control or dispatch centre.

7.4 IATA also reported that some States were not complying with Annex 11 standards regarding the identification of Standard Instrument Departures/Standard Instrument Arrivals (SIDs/STARs) for their acceptance by the air traffic control database. Furthermore, some States were not publishing these coded procedures.

7.5 In view of the above, the Meeting was informed that the CAR and SAM technical implementation groups were working on the identification of probable causes of error and on the development of proposals that would help mitigate flight plan transmission problems that affected efficiency and safety.

Exception in the Filling of the Alternate Aerodrome field

7.6 Under this agenda item, IATA informed the Meeting that this exception was covered by Amendment 36 to ICAO Annex 6, Part I, and that this had been a joint IATA and ICAO initiative to improve aircraft fuel efficiency and reduce emissions, allowing airlines to obviate filling the alternate aerodrome field, as specified in ICAO Annex 2 and the FPL format in Doc 4444.

7.7 The Secretariat recalled that the main purpose of the aforementioned Amendment 36 was to introduce globally harmonized planning criteria for the selection of alternate aerodromes and for pre-flight calculation of total fuel supply.

7.8 The Meeting took note of the uncertainty expressed by one State, whose interpretation of Doc 4444 was that it did not require the transmission of alternate aerodrome data, as in the case for the supplementary flight plan, which the operators had to complete but were required to transmit only upon request. The Meeting considered that the study groups of the two Regions should analyse this matter in more detail in order to have a technical basis for a regional agreement on this subject.

7.9 Based on the above, the Meeting considered that the CAR and SAM regional technical groups for the implementation of alternate aerodrome selection and fuel planning provisions should examine this issue in order to reach a regional agreement on the matter.

Air Traffic Control Simulator of INAC – Bolivia (Cochabamba)

7.10 The Meeting received information on the new state-of-the-art air traffic control simulator that had been installed at Bolivia INAC in 2014 (*Instituto Nacional de Aviación Civil)*, as well as on the new air traffic controller training programmes provided at INAC. These important services were made available to the aeronautical community of the CAR/SAM Regions.

Equipment for In-Flight Verification of Navigation Aids in Bolivia

7.11 The Meeting took note that, since 2012, the Directorate General of Civil Aviation of Bolivia (*Dirección General de Aeronáutica Civil de Bolivia)* had a modern in-flight inspection unit consisting of a Beechcraft King Air B350 aircraft and an NM3625B automated verification panel, supported by a high-precision satellite reference station. It also noted that the verification aircraft was available in case any CAR/SAM State required it.