International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
Third Meeting of the Programmes and Projects Review Committee (PPRC/3)
Mexico City, Mexico, 21 to 23 July 2015

Agenda Item 3: Review of GREPECAS Programmes and Projects

3.4 Projects under the Ground-Ground/Air-Ground Communication Infrastructure Programme (B0-FICE and B0-TBO)

DESCRIPTION AND FOLLOW-UP TO THE IMPLEMENTATION OF PROJECT ACTIVITIES UNDER THE GROUND-GROUND AND GROUND-AIR COMMUNICATION INFRASTRUCTURE PROGRAMME FOR THE CAR AND SAM REGIONS

(Presented by the Secretariat)

SUMMARY

This working paper presents updated information on the status of implementation of activities under projects D1, *ATN Architecture*, and D2, *Ground-Ground/Air-Ground Applications*, of the *Ground-Ground/Air-Ground Communication Infrastructure* programme for the SAM Region, and project D, *ATN Infrastructure in the CAR Region and its Ground-Ground and Ground-Air Applications for the CAR Region*.

REFERENCES

- Final report of the GREPECAS/17 meeting (Cochabamba, Bolivia, 21-25 July 2014)
- Final report of the SAM/IG/14 meeting (Lima, Peru, 10-14 November 2014)
- Final report of the SAM/IG/15 meeting (Lima, Peru, 11-15 May 2015)
- ANI/WG/02 meeting report (Puntarenas, Costa Rica, 1-4 June 2015)

ICAO strategic objectives:	*A - Safety* *B - Air navigation capacity and efficiency* *E - Environmental protection*

1 Background

1.1 The GREPECAS/17 meeting took note that project activities under programme D in the CAR and SAM Regions had been aligned with the regional air navigation priorities and objectives defined for the CAR and SAM Regions and duly contemplated in the Port-of-Spain and Bogota Declarations, respectively.

1.2 Likewise, as a follow-up to Conclusion 2/4 – *Follow-up on AN-Conf/12 recommendations by States and International Organisations*, the Meeting took note of the analysis made of the recommendations and their impact on project activities.

1.3 Finally, GREPECAS/17 reviewed the progress made and the difficulties encountered in the execution of projects since PPRC/2, highlighting the progress made in the implementation of the MEVA III and REDDIG II networks, the AMHS interconnection between the United States and the Dominican Republic, and the drafting of the *Guide for the implementation of air-ground data link applications in the SAM Region*.

2 Discussion

2.1 The progress of the D programme projects in the CAR and SAM Regions since GREPECAS/17 is described below.

CAR Programme D, Ground-Ground/Air-Ground communication infrastructure

Project ATN Infrastructure in the CAR Region and its Ground-Ground and Ground-Air Applications

2.2 Project ATN *Infrastructure in the CAR Region and its Ground-Ground and Ground-Air Applications* supports the implementation of the ATN network in the CAR Region and the implementation of its ground-ground and air-ground ATN applications, based on the regional performance objectives of the NAM/CAR Regional performance-based implementation plan (NAM/CAR RPBANIP) and the CAR/SAM ANP. Within the context of this objective, the following deliverables have been obtained since GREPECAS/17:

- Successful and complete modernisation of the regional MEVA network, called MEVA III, whose installation and commissioning were completed between February and March 2015. This activity included training and OJT for all members of the MEVA network, as well as the provision of equipment, spare parts, documentation, local monitoring, supervision and testing, in addition to failure management, monitoring and network performance optimisation.

- Satisfactory performance during 2014-2015, as assessed at the MEVA III-REDDIG II meeting (Aruba, 25-26 May 2015).

- New IPv4 addressing scheme for the CAR Region, version 1.1.

- The regional AMHS implementation matrix for the CAR Region was updated. With the new MEVA III network, it is foreseen that two AMHS circuits will be implemented in 2015, and two more are in the testing phase.

- The NAM/CAR regional AIDC implementation plan was updated.

- An implementation action plan template was developed using the NAM ICD.

- An ICD comparison was conducted pursuant to Conclusion GREPECAS/17/9.

- A CPDLC/ADS-C implementation guide has been provided, as well as an action plan template to guide CPDLC/ADS-C implementation.

- The implementation of the CDPLC/ADS-C service in the Central America and PIARCO FIRs is foreseen for late 2015.

2.3 This project coordinates its activities and deliverables with Project C of the CAR Region. Regarding the goals established in the RPBANIP, the following has been achieved:

ASBU module	Elements	Progress by June 2015	Goal (RPBANIP)
B0-25/FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	1. MEVA III IP Network implementation	100%	100% implementation of MEVA III IP Network by MEVA Member States by August 2015
	2. AMHS Implementation	3 NAM/CAR Sates operational	4 States with Air Traffic Services Message Handling Services (AMHS) interconnected with other AMHS by December 2014
	3. AIDC implementation (Port-of-Spain Declaration goal)	81.82% NAM/CAR ACCs	50% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC/OLDI with a neighbouring ACC by December 2016
	4. ATN Router Structure implementation	40%	70% of ATN router structure implemented by June 2016
B0-40/TBO: Improved Safety and Efficiency through the initial application of En-Route Data Link	5. ADS-C Over Oceanic and Remote Areas	0%	80% of selected FIRs with ADS-C implemented by December 2016
	6. CPDLC	0%	80% of selected FIRs with CPDLC implemented by June 2018

SAM Programme D, Ground-Ground/Air-Ground Communication Infrastructure

2.4 Since the restructuring of GREPECAS (Decision 16/45), the SAM Ground-Ground/Air-Ground Communication Infrastructure programme includes project D1, ATN Architecture in the SAM Region, and project D2, ATN ground-ground and air-ground applications in the SAM Region.

2.5 The main activities conducted by these projects since the GREPECAS/17 meeting, when the last follow-up to GREPECAS programmes and projects was conducted, are described below.

Project D1, ATN Architecture in the SAM Region

2.6 The activities under project D1, *ATN architecture in the SAM Region*, whose purpose is to study and implement the optimum architecture for an IP-based core network (REDDIG II) for the SAM Region, are practically finished. The implementation of REDDIG II was completed by late January 2015 and begun operations at early February 2015. The main activities carried out since GREPECAS/17 are detailed in **Appendix A** to this paper.

2.7 Outstanding activities of project SAM D1 would be completed in January 2016, with the commissioning of the new Brasilia node.

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

2.8 The activities of this project that are still pending involve the operational implementation of AMHS and AIDC. AIDC activities were coordinated through project C1 on ATM automation, and are presented in WP/11 of this Meeting.

2.9 Since GREPECAS/17 meeting no new AMHS interconnections were implemented. AMHS interconnections are only those so far implemented (Peru – Colombia, Peru – Ecuador, Argentina – Paraguay, Guyana-Suriname).

2.10 It had been foreseen that, by the end of 2014, final AMHS interconnection tests between Brazil-Peru, Brazil-Argentina, Peru-Argentina and Brazil-Paraguay would be completed, using a list of procedures (aligned with the SAM AMHS interconnection implementation guide) provided by Spain and used for the conduction of AMHS tests between Spain and Brazil. The AMHS interconnection tests between Brazil and Spain were satisfactory, but operational implementation is foreseen for the second half of 2015.

2.11 Unfortunately, it has not been possible to conduct the aforementioned AMHS A interconnection tests, mainly due to the implementation of REDDIG II, which has demanded a great effort by the technicians of the States involved, in addition to problems faced with the existing AMHS operational circuits.

2.12 In this sense, the States involved noted that they would make utmost efforts to complete the interconnections as scheduled, taking into account their commitment under the Bogota Declaration to complete all the interconnections by the end of 2016.

2.13 **Appendix B** describes projects D of the CAR Region, and **Appendices C** and **D**, shows description of projects C1 and C2 of the SAM Region respectively.

3 **Suggested action**

3.1 The Meeting is invited to:

a) take note of the information contained in this working paper;

b) review the status of implementation of project activities under programme D of the CAR and SAM Regions, as described in section 2 and Appendices A, B, C, and D, with a view to approving the planning, status, and execution of such activities; and

c) discuss other related matters it may deem appropriate.

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APPENDIX A

Developments in Project SAM D1

a) The four phases and the two rounds of the scheduled theoretical-practical course of the REDDIG II were carried out between 11 and 22 August (first round) and between 25 August and 5 September (second round), in Rio de Janeiro, where a total of thirty-nine (39) participants were trained.

b) In order to coordinate the release of the REDDIG II equipment with focal points, teleconferences were hold periodically since past October to share the details of each local customs clearance process and also to present the status of MPLS last-mile implementations by Level 3 (ground network service provider).

c) The effective implementation of REDDIG II started on 15 January 2015, and was completed in 17 days. The implementation involved the following phases:

   a) Preparation for migration
   b) Ground network tests
   c) Completion of outdoor installation
   d) Commissioning of the satellite network
   e) Provisional acceptance tests (PSAT)

d) Teleconferences were held every day between 13 January and 3 February 2015, except on Sundays, to monitor the status of implementation in real time, to adopt the necessary corrective measures, and to support the States in the conduction of provisional acceptance tests.

e) The provisional acceptance tests completed in February 2015 revealed some unresolved aspects, which have been now mostly overcome, except for the freezing of some satellite modems, the IP telephony network in support of SAM ATFM requirements, and the stabilisation of asynchronous circuits. It is expected that these pending issues will be resolved by the end of July 2015 in order to proceed to final acceptance of REDDIG II.

f) The interconnection of the COCESNA MEVAIII node in Tegucigalpa with REDDIG II was completed in late March 2015, with the participation of technicians of CORPAC (Peru), COCESNA, INEO, and the REDDIG Administration. The interconnection was established by means of ATS speech circuits between the CENAMER ACC and the Guayaquil and Bogota ACCs.

g) The interconnection of the REDDIG II Bogota and Maiquetía nodes was accomplished by the MEVA III network provider, COMSOFT. In Maiquetía, the work concluded in late March, while work in Bogota was completed on 8 May. Regarding the services foreseen in Maiquetía, the AFTN Caracas-Atlanta, Lima-Atlanta, and Brazil-Atlanta circuits are still pending.

h) The fourth REDDIG II technical-operational meeting (RTO/4) was held in Manaus, Brazil on 20-21 April 2015, to review maintenance and operational procedures, coordination between the technicians at each node and the REDDIG expert in Manaus, failure reporting procedures, delivery and reception of equipment for repair, and other matters concerning day-to-day network operation.

i) In order to provide REDDIG II maintenance personnel with more in-depth knowledge, a course was held on 21-24 April 2015 in Manaus, on the “What’s up gold” network management system.

j) In order to coordinate the operation and maintenance of the MEVA III-REDDIG II interconnection, and to analyse the new services to be implemented in the short and medium term, the first MEVAIII/REDDIG II coordination meeting was held in Oranjestad, Aruba, on 25-26 May 2015.

k) The study and assessment for the addition of a new REDDIG II node were completed. This node will be installed in Brasilia. The main service to be provided through this node is AFTN with adjacent States.

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APPENDIX B

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 2016
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	2014-2015 Successful performance conducted in the MEVA III-REDDIG II Meeting (Aruba 25-26 May 2015)
Technical study of CAR networks for ATN implementation	RPO 6 of NAM/CAR RPBANIP/ ACDM- FICE	Project D		Completed	
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	

[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 version 1.1 for the CAR region was proposed
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	
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	The CAR Regional AMHS Implementation Matrix was updated. With the new MEVA III Network, it is expected the implementation of 2 AMHS circuits for 2015 and two more 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	The Regional NAM/CAR Regional AIDC Implementation Plan was updated. An Action Plan template for implementation using the NAM ICD was developed. A comparison of ICD was made as requested by GREPECAS 17/9 Conclusion.
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	A guidance on CPDLC/ADS-C implementation considerations was provided, as well as an Action Plan template to guide the CPDLC/ADS-C Implementation The CDPLC/ADS-C service implementation is expected for 2015 in the PIARCO and Central American FIRs.
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 C

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	January 2016
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 February 2015 • Complete the installation of the new REDDIG II node in Brasilia by January 2016
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 and ANRF: B0 FICE, B0 ASUR, B0 DATM and B0AMET 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 and ANRF FICE	REDDIG Administration, Project Coordinator and Omar Gouarnalusse (Argentina)		August 2010	**Completed**
Analysis of the current MEVA II/ REDDIG interconnection	PFF SAM CNS 01 and ANRF FICE	REDDIG Administration		June 2011	**Completed**
Analysis of the AMHS band width impact on the current REDDIG satellite infrastructure	PFF SAM CNS 01 and ANRF 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 ANRF B0 FICE ANRF B0 ASUR ANRF B0 DATM ANRF 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 and ANRF FICE	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
Definition of ATN IP network infrastructure model for the SAM Region	PFF SAM CNS 01 and ANRF FICE	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		October 2010	**Completed** Approved by REDDIG Member States
Completion of IPv4 addressing plan for the SAM Region	PFF SAM CNS 01 and ANRF FICE	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 ANRF B0 FICE ANRF B0 ASUR ANRF B0 DATM ANRF B0 AMET	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		August 2011	**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
Drafting of safety guideline for implementation of IP networks	PFF SAM CNS 01 and ANRF FICE	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 and ANRF FICE	Project Coordinator		May 2013	**Completed** Presented and approved at SAM/IG/11 meeting
Support in the bidding process and in the offer evaluation	PFF SAM CNS 01 and ANRF 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

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 implementation of REDDIG II	PFF SAM CNS 01 and ANRF 01	REDDIG II Project Administration and REDDIG II focal points		November 2013-January 2016	The provisional acceptance tests (PSAT) were completed on 6 February 2015, entering into operation the new REDDIG II proceeding to deactivate the REDDIG I Some problems arose during the PSAT that have been solved gradually, and being expected to be completed by end July 2015 The new interconnection MEVA III REDDIG II in Bogota (Colombia), Caracas (Venezuela) and Tegucigalpa (Honduras) was implemented at the end of March 2015. By the end of year 2015 a new node will be installed in REDDIG II, the node of Brasilia, which will be operational in January 2016.
Monitor the ATN architecture project activities in the SAM Region		ICAO		March 2010-January 2016	
Resources necessary	Economic contribution necessary for the implementation of REDDIG II				

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APPENDIX D

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	December 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 stated in the Declaration of Bogota • 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 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, MET 04, AIM 02 and ANRF B0 FICE, B0 TBO, B0 AMET and B0 DATM 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 ANRF B0 FICE and ANRF 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 and ANRF 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 and ANRF B0 TBO	Andrés Jansen (Brazil)		October 2013	**Completed** The finalized guideline was presented and approved at SAM/IG/12 meeting

[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)	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 ANRF B0 FICE ANRF B0 AMET ANRF B0 DATM	States / Project Coordinator / Programme Coordinator		December 2016	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
Monitor the implementation of ATN ground-ground and air-ground applications activities in the SAM Region		ICAO		March 2010-December 2016	
Resources necessary	Implementation of AIDC operational integration by the States of the Region				